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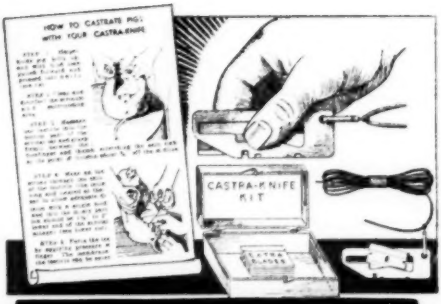


Students and beginners who have never done the job can now save important money. Do your own castrating and do it right. Half a litter or one calf pays for this kit.

The new Castra-Knife is a sharp handy, safe razor-blade cutter. Unlike old type castrators, it is always super sharp for a fast, sanitary, humane job. It is safer for you and the animal because blade sets to limit depth of cut, also retracts and is shielded when not in use.

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The Farmer's Digest

Volume 21 April 1958 Number 10

# New Idea: Cows Sleep, Eat and Milk on Self-Fed Silage

**A radical new idea in England beds dairy cattle on top of self-fed silage. Deep litter bedding absorbs manure . . .**

Condensed from The Dairy Farmer

TAKE a high roof barn, put a silo in it, add a lean-to—and there's the basic recipe for more profit from milk, one that is being followed on so many farms in England.

But here's a development not yet common in self-fed silage layouts: cows using the top of the silage as part of their yarding space; the roof that covers the silage also covers the cow.

Our drawing and our descriptions depict the set-up on Mr. S. Moreton's Burnt Heath Farm, Offchurch, Warwickshire—a set-up planned with considerable thought and after considerable study of self-fed silage layouts.

It's worth considerable study itself. Here are the facts about it.

The standing triple-span dutch barn, 90' x 63' x 18' to eaves, was extended to 108' by a lean-to. The floor was concreted, with a 1' in 90' fall away from the feeding face. A cross-section of the floor is shown with the large view.

Silage was clamped in two of the spans, between 8' sleepers placed almost vertically but lodging in grooves in the concrete and resting back against sole-bars fitted into the H-section steel posts or columns, the bottom sole-bar resting on stout steel

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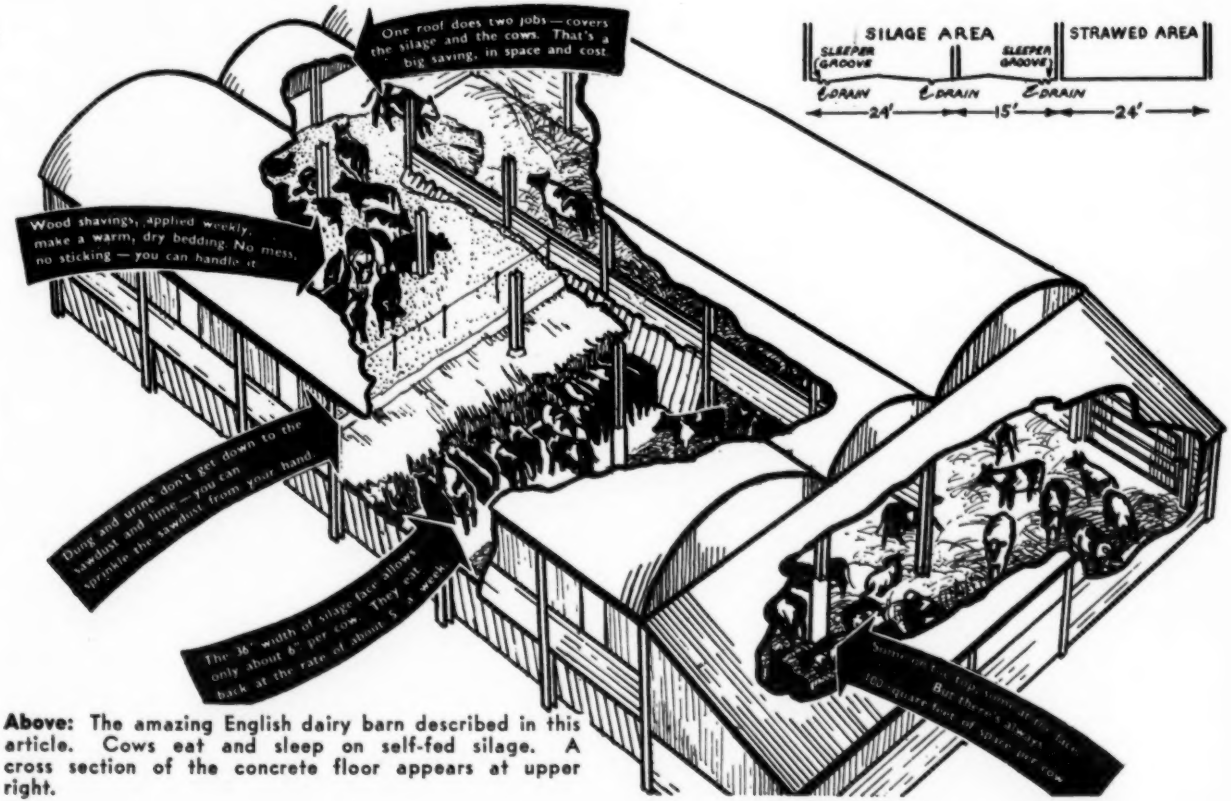

One roof does two jobs — covers the silage and the cows. That's a big saving, in space and cost.
SILAGE AREA
STRAWED AREA
SLEEPER GROOVE
SLEEPER GROOVE
E DRAIN
E DRAIN
E DRAIN
24'
15'
24'
Wood shavings, applied weekly, make a warm, dry bedding. No mess, no sticking — you can handle it.
Dung and urine don't get down to the sawdust and lime — you can sprinkle the sawdust from your hand.
The 36" width of silage face allows only about 6" per cow. They eat back at the rate of about 5' a week.

**Above:** The amazing English dairy barn described in this article. Cows eat and sleep on self-fed silage. A cross section of the concrete floor appears at upper right.

brackets bolted to the columns.

Above the sole-bars on the outside wall is galvanized iron sheeting—with a perspex sheet (translucent plastic) to each bay. The outside wall of the non-silage span has sole-bars from the ground up to 12'; then iron sheeting with perspex.

There is artificial lighting in the roof.

Steel columns surrounded by silage are protected to the required height by concrete—achieved by wrapping barbed wire round first, then running concrete into a wooden cylindrical mold, followed by smoothing.

The silage, 7' deep, 500 tons of it, from 55 acres of 1-year ley, was built to a 'wall' face at the feeding end but ramped to allow access from the non-silage span.

Harvesting was by silorator (rotary chopper), loads tipped on concrete floor, carried to clamp by buckrake; consolidation by crawler tractor each day; sealing by 5" of limestone (70 tons).

In readiness for self-feeding, the limestone was bedded with 6" of sawdust, then woodshavings. The rest of the barn area was strawed—except for a 10' strip from the feeding face. On the silage an electric fence was set, also 10' back from the feeding face.

Then self-feeding began, with the 68 cows (commercial Friesians )having a constant feeding face of 36' (about 6" per cow) and a constant yarding area of 100 square feet per cow—as the silage area diminishes, the strawed area is increased.

**Agricultural engineers urge drain tile. Main lines should be designed in accordance with the total area to be drained and the grade or fall. The smallest size recommended for laterals is four inch. However, do not use more than 1300 feet of four inch tile in any one line.**

Further woodshavings are added weekly to the silage cover as required. They absorb all dung and urine, provide warm and dry lying and are free from stickiness.

About every two weeks the electric fence has to be moved back about 10' and a fresh strip of silage cleared of shavings, sawdust and lime, all taken to the fields. This is a nine-hour job.

A daily one-hour job is bedding down the strawed area and cleaning the concrete front of the feeding face. Any silage rejected by the cows is given to steers; what little 'muck' there is goes on a spreader and when the spreader is full, is hauled to the fields. Also, as the silage is eaten, the exposed sleepers on the strawed area side are removed

to prevent their being knocked over.

The barn area will be mechanically mucked-out in spring, the external sole-bars being easily removable for this and for silage-making.

**The circulatory system of each human body includes 60,000 to 100,000 miles of veins, capillaries, arteries—a greater length than all the railroads of the U. S.**

Silage quality is not yet fully known but estimated at 23/24 per cent dry matter, with crude protein about 12 per cent of dry matter, making 2 per cent digestible protein in the silage.

Average density is 60 lb. per cubic foot, ranging from 42 lb. at the top, 56 lb. halfway and 62 lb. two feet from the floor. Consumption is estimated at 80/90 lb. per cow per day. Access is about 21 hours a day, the other 3 being taken up with milking and individual feeding of concentrates in the cowsheds.

Theoretically 90 lb. of silage, with 2 lb. hay, provides starch for M+1½, protein for M+1-5/6. Above 1½ gallons is fed 3½ lb. of home-mixed: 5 cwt. groundnut, 6 cwt. maize, 3 cwt. oats, 6 cwt. barley, and minerals.

**4 Gallons Per Cow Per Day**

The herd (two-thirds being first-calf heifers) calved between September and mid-December. Through December the average was 4 gallons per cow per day; now it is higher. Highest individual yield has been 8 gallons.

It is too early yet to give actual cost-saving figures. But these feeding facts speak for themselves—

*LAST WINTER: hay (full ration) fed in cowsheds, silage fed in cowsheds, mangolds fed in cowsheds, kale cut and carted to field—and 4 lb. of cake for every gallon.*

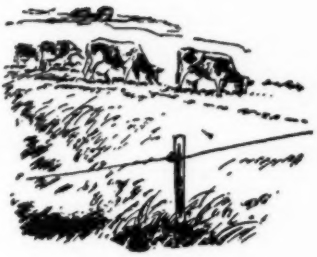
*THIS WINTER: hay (2 lb. to 3 lb. per cow, some eat it, some don't) fed in cowsheds, self-fed silage under the barn—and 3½ lb. home-mixed concentrates for every gallon after one-and-one-half.*

**People who expect to see better days need to watch their nights.**

A clear saving in food, a clear saving on labor, and—by letting the cows sleep on the silage—a clear saving in space and building costs.

Is this, like many other things, something only big farmers can take advantage of? When this question was put to Mr. Moreton he replied: There's no reason why it couldn't be done for a 20-cow herd.

# Don't Discount Bluegrass



**Feed native pasture the needed fertilizer; ration the grazing . . . and you boost feed and milk output two to five times . . .**

Condensed from The Farmer

THE right fertility program plus good grazing management can make a native grass pasture pay off as much as an 80 to 100-bushel corn crop, or a five-ton hay crop. And, at less cost! That's the summation of pasture trials at the University of Minnesota Grand Rapids Experiment Station and on several Northeastern Minnesota farms.

For years, most farmers have taken it for granted that their bluegrass pastures go into a so-called dormancy at the end of June, say Dr. Ermond Hartmans, University extension farm management specialist, and Charles Simkins, extension soils specialist, who headed the pasture demonstrations. The grass usually is left as is, for what it's worth—mainly because it is *permanent.* It can be counted on to be there each spring for limited grazing.

Usually, the grass pasture land is non-tillable because of slope, rocks or brush. Thus, renovation to legume-grass mixture poses a problem. The expense and uncertainty of getting a stand established, maintaining it, and bloat troubles lure many farmers away from renovation.

The Minnesota demonstrations show that summertime dormancy is no more than starvation or hunger for needed nutrients—nitrogen, for the most part, to keep the grass producing the entire season. No need for grass to lie down on the job early in the season, say the researchers. Find out first what the soil needs by soil test. Then, feed the grass as needed. It won't quit, as it would if not fertilized. Less supplemental grain or forage will be needed in summer. Weeds will get crowded out with the thick grass growth, grazing and clipping. And, best of all, milk output per acre can be increased two to five times — with more cows

Reprinted by permission from The Farmer, St. Paul, Minnesota

grazing each acre for at least a month longer season.

The average per acre return from 11 of the farm pasture trials are shown in the table. Per acre milk increase on the fertilized pastures over unfertilized varied from a low of 1,733 pounds increase in 105 cow-days of grazing to a high of 7,530 pounds increase in 424 cow-days of grazing.

**The U. S. Government owns about half of Montana.**

Fertilizer application costs varied from a low of $8.40 per acre to a high of $38.40 per acre. The increased TDN (total digestible nutrients) of the fertilized grass over unfertilized check plots varied from a low of 1,521 pounds per acre to a high of 4,109 pounds. Since 1,000 pounds of TDN are equivalent to one ton of good-quality hay, the 4,109 pounds of TDN would equal 4.1 tons of hay.

Protein analyses of the fertilized and unfertilized grass pastures showed that fertilizer actually increased the protein content 4 to 7%, points out Mr. Simkins. Unfertilized grass checked out at 12 to 14% protein, and the fertilized grass at 16 to 21%.

The cost of each 100-pound increase of TDN varied from a low of 54 cents to a high of $1.80. Compare these costs with the 100-pound TDN cost of the following feeds, which usually supplement pasture.

| | |
|---|---|
| Alfalfa-brome hay | $1.80 |
| Oats silage | $2.08 |
| Corn silage | $2.49 |
| Corn grain | $2.90 |
| Oats grain | $3.29 |
| 16% dairy concentrate | $3.75 |

### High Rate Profitable

On the basis of the cost of fertilizer applied and the resulting increased production, an application of 100 to 200 pounds of nitrogen per acre can be recommended for profitable returns on native pastures, says Dr. Hartmans.

Bluegrass was predominant on most of the farms, but with a percentage of brome, timothy, quack and other grasses evident. Soil tests were taken in each case, before applying the needed lime, phosphate and potash in early spring. Nitrogen was applied in split application—a part of it in early spring; the rest during the season, as the strip pastures were grazed and called for additional nitrogen.

The split applications of nitrogen have definite value in the pasture program, emphasizes Mr. Simkins. First, a single application of all the nitrogen in the spring would mean extremely rapid growth and earlier maturity of the grasses. Even with the ration-a-day pasture systems and

split nitrogen applications used on the trial farms, clipping of the mature grass stems (which the cattle left) was necessary during the season. Secondly, the split applications are a hedge against dry weather. If rainfall during a part of the summer is too little to make good use of additional nitrogen, it need not be put on. Thus, a farmer protects his fertilizer investment.

**Careful Management Needed**

Grazing management cannot be over-stressed in the grass pasture program, point out the researchers. Ration-a-day grazing —using an electric fence to portion off the amount of grass the herd will eat each day — is a must. And, clipping of ungrazed pasture and spreading of manure droppings by drag or other means after each grazing also are needed for fullest utilization of the grass.

The trials at the Grand Rapids Station emphasize the importance of the combined fertilizer treatment and good management practices. High-quality grass pasture yields, equivalent to five tons of hay per acre, were obtained last summer at a cost of 70-80 cents per 100 pounds of TDN. Or, about the same cost as that of producing the TDN in an average three-ton per acre alfalfa-brome hay crop.

A 10-acre pasture was divided into one-acre strips; each receiving 40 pounds of phosphate and 50 pounds of potash, but varying amounts of nitrogen (from 0 to 300 pounds per acre). Each strip (except those getting no nitrogen) also was treated with 50 pounds of nitrogen in early spring. Then, split applications of nitrogen were put on the strips at alternate times during the season.

**Farm phone service costs are up. Farmers are paying an average of $3.85 a month as compared to $3.66 last year.**

On May 30th, when the grass was five inches tall, 33 Guernsey cows were turned into the 10-acre pasture. They stayed there until September 5. Each one-acre strip was grazed about a third to a half acre per day, by means of an electric cross-fence. The restricted grazing system was used throughout the season. Each strip was clipped and the droppings spread after each grazing.

Records were kept on the number of cows grazing each strip and the pounds of milk produced. Weight of each cow was recorded before and after the grazing period. Each cow's feed (in addition to pasture) also was weighed. These records gave the researchers an accurate check on TDN

produced from each strip, shown as follows:

| Nitrogen Used (pounds) | Total TDN Utilized (pounds) |
|---|---|
| 0 | 1,551 |
| 50 | 2,643 |
| 100 | 3,572 |
| 200 | 4,318 |
| 300 | 3,746 |

The application of 200 pounds of nitrogen returned the greatest amount of TDN. An average of 424 cow-days and 10,075 pounds of milk per acre was obtained from this treatment, compared with 135 cow-days and 3,175 pounds of milk on the check strip. Even though more grass was produced under the 300-pound nitrogen treatment, less of the grass was utilized because of mature growth. Cost of each 100 pounds TDN with the 100-pound nitrogen application was 75 cents. When the treatment was increased to 200 pounds, the cost was $2.01—still below the cost of most feeds used to supplement pastures.

Records of other Northeastern Minnesota farm pasture trials are equally significant—all of them on the plus side from the addition of fertilizers and controlled grazing.

For example, on the Lewellyn Hawkins farm, St. Louis County, milk production was increased from 1,647 pounds per acre on unfertilized bluegrass to 8,100 pounds with the addition of 188 pounds of nitrogen, 36 pounds of phosphate. The fertilizer cost totalled $36.60 per acre. Stretched out over the increased return in feed, this spelled only 89 cents per 100 pounds of TDN. Pasture cow-days were boosted 62 to 323.

Less fertilizer was applied to grass on the Reiner Nelson farm, Pine County. But, milk output shot from 2,849 pounds to 6,026 pounds per acre with the addition of 161 pounds of nitrogen, 18 pounds of phosphate, and 48 pounds of potash. Cost of each 100 pounds of increased TDN was $1.16. There were 242 cow-days on the fertilized pasture, compared with 118 on the check.

Just as startling were the records of the other eight farms in the 1957 trials. In each case, the applied fertilizer and management paid off in a two to five times increase in cow-days of grazing and milk production over untreated grass.

There are limitations in which the grass pasture program can be made as successful as on the Northeast Minnesota farms. First, rainfall must be sufficient to supply grasses with moisture through the season. They have a shallower root system than legumes. Secondly, droughty land, due

either to sandy texture soil or extreme slope, or land on which grass cannot be clipped, should not be considered for this type of program, say the researchers.

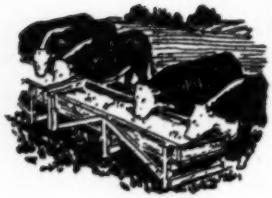
However, there are many thousands of acres of native grass pastures in the Midwest that do meet the requirements of the improved pasture program. They now produce as little, or less, than one-fifth of their capability. The Minnesota native pasture demonstrations are attracting widespread interest. Next summer, they will be extended to other parts of the state, with emphasis in Southeastern, Minnesota.

## HOW IT PAID

THE following table shows how fertilizer and good management increased returns from bluegrass pasture on Northeast Minnesota farms:

| | Fertilized Grass | Unfertilized Grass |
|---|---|---|
| Fertilizer used per acre (average) | 144 lbs. nitrogen<br>28 lbs. phosphate<br>60 lbs potash | none |
| Cost of fertilizer (average) | $27.48 per acre | none |
| Average number of cows in herds. | 23.7 | 23.7 |
| Average cow-days per acre | 293 | 116 |
| Average net total digestible nutrients (TDN) per acre | 3,901 pounds | 1,442 pounds |
| Average increase of TDN per acre | 2,459 pounds | |
| Average cost per 100 lbs. TDN increase | $1.12 | |
| Average pounds milk produced per acre | 5,891 | 2,321 |
| Average increase of milk per acre | 3,570 pounds | |
| Value of increased milk per acre at $3.70 per cwt. for grade A | $132.09 | |

# Should You Implant Hormones Or Feed Them?



**Everyone agrees that hormones do the job on beef. The question is whether you should feed or implant. Both methods have advantages for dry lot, but implanting appears best for pasture feeding . . .**

Condensed from
National Live Stock Producer

*Lee Schwanz*

THERE'S a great debate going on about hormones for beef cattle. It's not whether or not they do the job—there's general agreement on that. The question is, should we mix the hormones in feed or should we give the steers a hormone pellet in the ear?

Use of hormones to boost cattle profits has caught on faster than any new practice since hybrid corn came along. Dr. Wise Burroughs, Iowa State College nutritionist, estimates that 70% of the cattle on feed last winter were getting hormones. That's a tremendous record for a beef-feeding practice that got its on-farm start just three years ago.

**Rate of Gain Increased 18%**

This is not so surprising when you consider the average results experienced by good farmers and in college tests:

- Rate of gain has been increased 18%.
- Feed saving runs around 12%.
- Cost is about ½ cent per day for each steer.
- Return on each dollar invested in hormones is from $10 to $20.

This is the most significant development in cattle feeding in our time. It has made 3 lbs. per day cattle gains possible—and almost standard on high-grain ration.

Both implanting and feeding hormones are effective practices. You can get big increases in gain with either. Some farmers say it is too much work to run steers through a squeeze chute and do the implanting, even though there are some cost advantages. They prefer feeding. Others say there's nothing like implanting.

**Reprinted by permission from National Live Stock Producer, 139 N. Clark St., Chicago 2, Ill.**

Dr. W. M. Beeson of Purdue University declares, "Based on my correspondence and conversation with cattle feeders, it is my opinion that implants are being more widely used in cattle feeding operations every day.

**A good plowing job at the right soil moisture is all the tillage needed for corn, think Michigan State University soils scientists.**

"Several years ago implants got off to a bad start because the levels were too high and severe side reactions were noted. However, we now know that low levels will give good results just as effective as feeding. Cattle feeders who have implanted steers are highly pleased with the results."

Spokesman for the hormone feeders is Dr. Wise Burroughs, Iowa State College animal nutritionist. "Feeding is a convenient and low cost method of administering hormones to beef cattle. When you consider labor costs and the material, feeding is more economical. In nine college tests where implantation of estrogen hormones were compared with feeding, net returns per steer were $4 or $5 higher on the average by the feeding method."

So it goes — wherever cattlemen gather, there's general agreement that hormones are profit boosters. When they debate "which way" there are plenty of men to argue both sides. Here's a summary of the advantages of both methods:

*Feeding:* It costs about a half-cent per day to put 10 mgs. of stilbestrol in a steer's feed. And you can feed him 120 days for about 60 cents. For that investment, you can expect an extra third of a pound daily gain or 40 pounds of beef. That's an $8 return for a 60 cent investment. Put another way—$1 spent, returns $13.

Dr. Burroughs believes that feeding makes superior carcasses. That's because of more uniform day-to-day intake through feed. You can give a steer 10 mgs. each day and that's about what he can use. Where stilbestrol is fed, carcass grades on the average are not appreciably affected by the hormone.

Feeding is the easiest method. The hormone comes mixed in supplement and causes no extra work. Pellets cost less but you have higher labor costs in implanting them.

Dr. Burroughs also has found that adding stilbestrol actually can lower the cost per ton of cattle supplement — even though it costs $8 to $10 to put it in.

Iowa tests suggest that the total protein needed by cattle is slightly less when stilbestrol is in the feed. It also is possible to

make higher use of low cost Urea as a source of protein in the ration. Used in the Iowa economy supplement, costing only $50 per ton, these ingredients produced 3 lbs. per day gains when fed at the rate of only 1 lb. per day.

**Three Pellets Cost 9 Cents**

*Implants:* You can get hormone effect throughout the feeding period by injecting pellets into the base of the ear. Steers are placed in a squeeze chute and 3 pellets are quickly implanted for dry lot feeding; 2 pellets for pasture feeding. Farmers say they can implant 100 steers in 2 hours with a simple injection gun.

Steers should be implanted at the beginning of the feeding period. One shot lasts from 150 to 180 days. Cost is about 9 cents for three pellets and the gun to place them runs around $15. That means you can use hormones for 180 days for 9 cents, feeding the same length of time would cost 90 cents.

Dr. Beeson says implanting stilbestrol will increase gain 15% to 25% and will improve feed efficiency about 10%. Usually gains are stepped up from .2 to .4 of a pound daily.

One additional advantage — you can be sure each steer is getting the benefits of the hormone when it is implanted. Ten milligrams in a day's ration calls for some extremely thorough mixing.

Implanting seems to have a clear-cut advantage for cattle on pasture. In a Purdue test where steers were fed on alfalfa-ladino clover, gains were 3.07 lbs. per day following a 24 mg. implant. Feeding 10 mg. daily produced only 2.65 lbs. per day. Cost per pound of gain (not counting pasture) was 9.1 cents with implants and 11.1 cents where stilbestrol was fed to cattle.

---

**Two opposing political candidates were arguing. "There are hundreds of ways to make money," one declared, "but only one honest way."**

**"And what's that?" the other asked.**

**"Ah-ha!" the first answered. "I thought you wouldn't know."**

---

When sold at Indianapolis, buyers bid $24 for the implanted steers and only $23.50 for the orally fed animals.

In another state college test on pasture, these results were recorded.

| Method | Daily Gain Lbs. | Cost per Lb. |
|---|---|---|
| No hormones | 2.71 | 10.2c |
| 10 mg. fed daily | 2.56 | 11.1c |
| 24 mg. implant | 3.06 | 9.1c |
| 36 mg. implant | 3.19 | 8.8c |

In Georgia experiments, cattle were fed from January to June on temporary winter pasture and grain. Those receiving hormones in feed gained .21 lb. daily more than those getting no hormones. But steers getting hormone implants gained .62 lb. more daily — 3.05 lbs. a day.

**"I've heard so much about you — now, let's hear your side of the story."**

In a Kentucky experiment, one pellet of stilbestrol implanted in creep-fed nursing beef steer calves jumped the rate of gain 19.5%. Averages of 43 feeding trials show steers getting three stilbestrol pellets made 19% better gains and used feed 13.5% more efficiently than animals getting no stilbestrol.

The number of feeders who have been using hormones for cattle on pasture is far below those feeding it in dry lot. Don't miss the opportunity to get more out of your grass this year. If you are feeding some grain, you can mix in the hormone supplement. But even if you are using grazing alone, you can get hormone "kick" with an implant. It can mean an extra quarter pound of gain per day—or even more—at a very small cost.

## Long-Fed Cattle Make Money in 1957

Long-fed good to choice steer calves and yearlings made the most money for Illinois farmers in 1957.

Steer calves averaged about $48 a head above feed costs. Long-fed good to choice yearling steers returned about $45. Compared with a year before, steer calves averaged about $3 a head more, while yearlings returned about $3.50 less.

Short-fed good to choice heavy steers bought in the fall of 1956 failed to pay their feed cost by almost $2 a head. A year ago they returned only 24 cents a head above feed costs. These figures are from actual farm records of Illinois cattle feeders cooperating with the Farm Bureau Farm Management Service.

Most of these short-fed heavy cattle were sold early in 1957, before fat cattle prices moved up. The long-fed calves and yearlings were sold later in the year, after prices had advanced. Also, lower costs of gains on the lighter cattle provided a substantial margin between feed costs and sale price. —*Illinois Extension*

# How To Convert to Wheeltrack Corn Planting

**It cuts costs, planting time and soil losses . . .**

Condensed from
The Republic Farm Spokesman

*Arthur E. Peterson,* University of Wisconsin

WHEELTRACK planting of corn is a promising new idea in corn culture. You may save from $5 to $7 per acre by trying this idea on your corn land this coming growing season. Wheeltrack planting means planting corn in the tractor tracks on *freshly* plowed ground without the harrowing and disking required for conventional seedbed preparation. With this method of planting, the corn planter is hitched behind the tractor so that the corn is planted in the tractor tracks. The soil compaction caused by the tractor provides the only seedbed preparation for the corn.

Although experience shows that seedbed preparation is necessary if good germination is to be obtained, this does not mean that a seedbed must be prepared be*tween* the rows as is the case with conventional tillage. In fact, germination has usually been higher on wheeltrack planted fields than on those receiving conventional preparation.

**Consider These Advantages**

*Conserves Soil:* When new wheeltrack planting is practiced the rough, loose soil between the tracks will absorb water readily. This minimum tillage method reduces soil compaction and helps maintain soil structure. Thus more moisture is allowed to soak into the field and runoff is reduced. Erosion may also be reduced on old hay and pasture fields because the sod cover is left on the field longer since the plowing must be done shortly before planting the corn.

*Uniform Corn Germination:* Planting corn in the tractor track will improve corn germination especially in dry years. The corn

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is always planted in the direction of the plowing and since there are no tracks or tillage operations across the corn row, very uniform depth of kernel placement is obtained. The freshly plowed furrow usually contains enough moisture so the seed germinates rapidly. On the other hand, conventional seedbed preparation often hastens soil drying so much that the corn germinates poorly and unevenly unless it soon gets rain.

**The village of Valley Grove, West Virginia, with a population of 800 collects about $30,000 each year from traffic fines—from out-of-town motorists, of course.**

*Better Weed Control:* With conventional seedbed preparation, the weed seeds normally have one or two weeks head start on the germinating corn seed; this means that it is usually necessary to cultivate the corn when it is still very small. Many corn plants may be killed unless utmost care is used in that first cultivation. However, with wheeltrack planting, the corn and weed seeds in the row start germinating at the same time, while the weed seeds in the loose, dry soil between the rows remain dormant. Therefore, the corn is usually 6 to 12 inches high before cultivation is necessary. Spraying with pre-emergence weed killers, broadcast or over the wheeltrack, delays this first cultivation even further and may entirely eliminate the need of cultivation for weed control.

*Cuts Planting Time and Costs:* Elimination of disking and harrowing will reduce out-of-the-pocket expenses for fuel and maintenance of equipment, and labor which is so critical during the planting season. And the delay or elimination of cultivation also saves time and money.

Comparison of the wheeltrack and conventional corn planting methods shows that wheeltrack planting can save about $5 per acre, or about 40 per cent of the tillage costs. Here is an approximate per acre breakdown of the costs:

| | Conventional Planting | Wheeltrack Planting |
|---|---|---|
| Plowing | 3.00 | 3.00 |
| Disking | 2.80(2) | .... |
| Harrowing | 1.00 | .... |
| Planting | 1.40 | 1.45 |
| Cultivating | 3.60(3) | 1.20(1) |
| TOTAL | $11.85 | $5.65 |

Farmers planting large acreages often feel they cannot use a 2-row planter or delay plowing until corn planting time because it is such a slow job. However, by using a four-row wheeltrack planter, numerous large corn growers (300 to 1000 acres) are enthusiastic about wheeltrack

planting. They find that by concentrating only on the plowing and planting they are able to plant their corn in a surprisingly short period and save time and money as well.

*Sod Cover and Manure Well Used:* In most areas of the dairying sections of the United States, corn is planted on fields that have been hay or pasture the previous growing season. If this sod is left unplowed until corn planting time it will provide more green manure and also provides cover for protection against erosion for a longer period of time. During a wet, cold spring, this will also help to dry and warm the wet soils because the grass will transpire much more water than will evaporate from a bare soil.

Plowing at planting time means more efficient use of barnyard manure in two ways. First, it gives the farmer more time to spread manure before plowing. And second, manure which is plowed under will decompose more rapidly, releasing plant nutrients for crop use.

### Soils for Wheeltrack Planting

Field experiments on all major soil areas of Wisconsin indicate that wherever it is possible to spring plow for corn this method will work. Also, results show that in some areas where farmers previously thought they had to fall plow for corn, in order that the winter freezing and thaw would loosen the soil, spring plowing with wheeltrack planting accomplished the same results with reduced soil loss.

**Last year, about a quarter of every dollar spent at retail in the U. S. went for some type of automobile cost or expense.**

Wheeltrack planting of corn has been used successfully for the past four years on the poorly drained silt loams of north central Wisconsin, the silt loam prairie soils of southern Wisconsin, and the red clay soils of eastern Wisconsin. The sandy soils are also satisfactory except where the soil is so sandy that it becomes too dry to turn the furrow over at corn planting time.

### Necessary Machinery Adaptations

It is necessary to narrow the rear wheel tread (spacing) of most tractors to the minimum setting provided by the manufacturer so that the tracks made by the tractor wheels will coincide with the corn planter row spacing. However, a difference of about 4 inches between the wheel spacing of the tractor (depending on the tire width) and the corn planter usually is acceptable.

*Increases Danger of Tractor Tipping:* One should always be aware that using the narrow

wheel spacings greatly reduces the stability of a tractor. For this reason only adults who are aware of this should operate the tractor. Low speeds should be used when turning and utmost care when one wheel encounters a dead furrow, stone, ditch or other obstruction. Operation on steep slopes should be avoided.

**The Mississippi River moves some 400 million cubic yards of mud into the Gulf each year — and each cubic yard weighs some 3,000 lbs.**

*Two Row Planters:* Low tractors, sometimes called "utility type" can be narrowed more safely than the higher clearance row crop models. Some of these models can be narrowed to a rear tread of about 40 inches and are ideally suited for 2-row wheeltrack planting. Most of the smaller utility type tractors (two bottom plow) can be narrowed to about 48 inches rear wheel tread. If the row spacing of the corn planter can be increased to 44 inches, then the marked rows can be set at 36 inches, resulting in an average row width of 40 inches. Most cultivators can be adjusted to the change in row spacing.

If you are unable to readjust the wheel spacing on your tractor for the proper row spacing, a tricycle type of tractor will also work well. Set the rear wheels at 80 inches on center and hitch your corn planter off center so that it will be following directly behind one rear wheel and the track from the front wheels. The rear wheel that does not have the corn planter directly behind it, will serve as a marker while traveling in one direction and will be running over the last corn row that has just been planted, when on the return round. This will not hurt the corn but will somewhat reduce the effectiveness of any preemergence spray that may have been applied with the corn planter.

*Four-Row Planters:* The use of two-row planters and cultivators is necessarily limited to smaller acreages. Farmers who have four-row planting and cultivating equipment will want to continue four-row operations even with wheeltrack planting. One very satisfactory modification has been on the "utility type" tractor where the rear tread can be narrowed to within 4 inches of the corn planter row spacing. The front axles are extended to a 120-inch tread. Using a larger tire on the front, preferably 8 inches or wider and filled with fluid, helps to compact adequately a larger area. It is possible to adjust some corn planters to a 44-inch spacing between the center two rows and

use a 38-inch spacing on the other two rows to give a 40-inch row average. This still permits cultivating with four-row cultivators and picking with two-row corn pickers.

On some of the larger row crop tractors, the reverse of the previous modifications can be made. That is, set the front wheels using at least an 8-inch tire, about 40 inches on center and extend the rear axles to about 120 inches. Some manufacturers now have special axles which permit rear wheel treads up to 106 inches. This is a very stable set-up, and gives fairly good weight distribution.

### Using a Tricycle Variation

Another variation is to use a tricycle type tractor. The rear wheels are set on an 80 inch tread and spaced so the track they make is 40 inches on each side of the track made by the front wheels. This will form tracks for three of the corn rows. The track for the fourth row can be made by mounting a wheel on a framework to make a track 40 inches to one side of a rear wheel. This wheel should line up with the rear axle for easy steering. Also, this wheel should be allowed to move up and down to give equal compaction on uneven contours. The planter must be hitched off-center so the corn planter will match the wheel tracks.

Other modifications have been made that involve placing compaction wheels between the tractor and the corn planter, or on the corn planter. However, this type does not make use of the tractor tracks, which actually is the best seedbed. Also, preliminary studies in 1957 indicate that such arrangements do not usually provide sufficient weight to give satisfactory compaction for the seedbed. The unused tractor tracks also provide an ideal place for weed seeds to germinate.

**A 40-watt light bulb with a reflector will throw about the same light on floor and equipment as a 60-watt bulb without a reflector.**

### Adequate Compaction Important

It is important to plow and plant the same day. Plowing the field several days before wheel-track planting is bad because it allows the topsoil to dry out and moisture urgently needed for germination is lost. This drying also prevents the compaction needed to insure a good seedbed.

The amount of compaction that will be obtained in any given field will depend upon several factors. One will be the type of soil, since the lighter soils (sandy) will compact more readily than the heavy soils. Second, the weight of the tractor is also im-

portant and usually a tractor smaller than a two bottom plow type (2800-3000 pounds) will not give sufficient compaction. Third, the moisture content of the soil will vary within certain limits. However, if the soil has the proper moisture content for doing a good job of plowing then it will soon be ready for wheeltrack planting. Under these conditions we have been concerned with obtaining sufficient compaction rather than worry about too much compaction. Fourth, the type of vegetation being plowed under, since hay or old sod ground will not compact as readily as corn or grain land.

**Snails have been used as human food by many peoples since ancient times. The Romans fed them till they were quite fat, ate them raw, or cooked in grease like our french-fries.**

## Weed Control

Quack grass must be controlled by field cultivation the previous fall, or by fall or spring-applied herbicides. It is best to check with your Agricultural Experiment Station for the recommendation in your area.

Annual broad-leaved and grassy weeds in the wheeltracks may become a serious problem. Timely cultivation will usually control them. Frequently, the first cultivation may be delayed until the corn is 6 to 12 inches tall. Pre-emergence applications of 2,4-D ester at the rate of 1½ pounds in 10 gallons of water per acre will also help control the broad-leaf weeds. Spraying can be broadcast or limited to a band 12 to 15 inches wide over the wheeltrack. By mounting a spray nozzle on the planter, you can easily plant and spray in one operation.

**Corn is now Louisiana's largest crop in terms of acres planted.**

The undisturbed plowing between the wheeltracks usually dries out, discouraging germination of weed seeds. A single cultivation when the corn is 12 to 18 inches tall is frequently all that is needed to control weeds when a pre-emergence treatment is made. However, pre-emergence treatment is not recommended for sandy soils.

In heavy soils where frequent rains keep the soil surface moist, weeds may grow between, as well as in the wheeltracks. By mounting a boom behind the planter, you can apply pre-emergence material over the entire surface area. This will give weed control even in unusually wet soil and weather.

**Comparative Corn Yields**

For the past four years the wheeltrack and conventional methods of planting corn have been compared throughout Wisconsin. Also most Agricultural Experiment Stations in the corn growing area of the United States have been making similar studies. In practically all cases, yields of the wheeltrack planted corn have been equal to or slightly higher than the conventional. The greatest increase in yield obtained in Wisconsin from wheeltrack planting was 123 bushels per acre, while conventional corn yielded 116 bushels. The plant population was 15,000 plants per acre in each case.

Increased yields from wheeltrack planting were usually due to increased plant population. Better seed germination, or additional moisture from increased absorption, and better weed control usually gave this greater population.

## Swine Artificial Insemination Promising

Artificial insemination of gilts and sows offers a way to make great improvements in hog production in the future, but there are many problems yet to be solved, says Wisconsin swine researcher, H. L. Self.

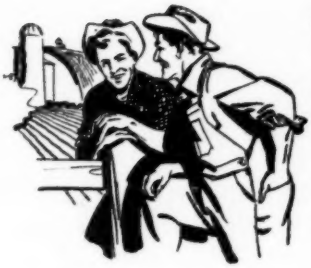
If the problems can be overcome, artificial insemination could bring improvement along several lines. For instance, farmers with a small sow herd could get the services of a high quality boar which they could not afford to own; more farmers could keep sows as a source of supplemental income.

Artificial insemination would probably reduce disease transmission at breeding time. Farmers could generally make better preparations for farrowing because their breeding records would be more accurate. The pig crop breeding, color, feed efficiency, and growth rate would generally be more uniform within an area under artificial breeding.

As an example of the economic benefits artificial insemination might bring, Self points to the feeder pig industry of his state. The greater uniformity and better breeding possible with artificial insemination should add at least $1 each to the value of these pigs, he says. That would bring an extra $400,000 into the state's economy. It would also upgrade by an equal amount the value of the 400,000 feeder pigs remaining in the state.

*—University of Wisconsin*

# Pigs, Prices and Politics



**A revealing preview of what you will hear this fall with lower hog prices just before election . . .**

Condensed from Successful Farming

*Earl L. Butz,* Dean of Agriculture, Purdue University; former Assistant Secretary of Agriculture

PIGS AND politicians are strange companions! Yet, before 1958 ends, they'll be in the barn lots together. And in some cases it may be difficult to tell which is which.

Hogs have been pretty good property the last year or so. But they are headed for trouble in late 1958. And that's where the politicians come in. Here's why:

- Any large farm commodity group in price distress seems always to be fair game for ambitious politicians. Some of these fellows seem to thrive on distress. It provides a ready-made issue for them.
- And it seems to be traditional in American politics that a privilege of the party *out* of power is to foment unrest and to make irresponsible promises. This is equally true of both parties, depending upon *which* is out of power.

It takes a mighty strong incumbent congressman or senator to show enough statesmanship not to jump on the bandwagon of trying to outpromise the other guy.

Inasmuch as we are probably going to be in this kind of a political 'top-your-promise' game next fall, we should take a critical look at the hog situation—*right now.* It's easier to be objective about this when hogs are selling for $18 or above and politicians are debating sputniks, than when hogs are below $15 and politicians are debating "giltniks."

Here are some facts about pigs and prices, illustrated by two recent periods:

1. Hogs sold for generally rising prices from November, 1956, until last September when a seasonal downturn began. Hog prices topped $20 for many weeks last summer, reaching a 3-year high of $23.35 August 1.

Reprinted by permission from Successful Farming, Des Moines, Iowa

The seasonal downturn in August and September was short-lived. A contraseasonal price rise put hogs above $20 again for a large part of December.

2. Farmers have painful memories of late 1955 when hogs dropped almost to $11.

**Supply of feeder cattle is expected to remain somewhat tight until summer, say farm economists. The recent demand for the few available head has pulled prices up $2.00 from October levels.**

What we need to note is *how* and *why* prices went from that $11 figure just a little over 2 years ago to over $20 in recent months. When hog prices were so low, producers responded by cutting back production and slaughter of hogs in 1957 by about 5 million below the 1956 figure. As a result of a reduced supply of hogs and pork, hog prices improved. The corn-hog ratio was above 14.0 practically all of 1957. It hit a high of 16.6 last September. This compares with a long-time average of about 12.0, 11.2 during 1956, and 9.2 in December, 1955.

This price improvement came as no surprise to anyone who knows anything about pigs and prices. The history of hog prices and production over a number of years indicates that whenever the corn-hog ratio is much above 12 to 1, hog producers increase the number of sows and gilts bred for next year's crop. Likewise, a ratio below 12 to 1 is usually followed by a reduction in farrowings.

This is the hog cycle. It has operated over a great many years with much regularity. It's an *economic* phenomenon—not political. It operates through Republican administrations as well as Democratic. It is no respecter of the political party in power.

The present cycle is no exception. The spring pig crop of 1957 was almost exactly the same as a year earlier. However, the fall crop which came from June 1 to December of 1957 was up about 3 per cent from a year earlier.

The next big bulge is in the making right now. The December pig survey predicted a 6-per cent increase in spring farrowings in 1958. However, the substantial strength in the hog market in the early winter months of 1957, combined with abundant feed supplies at lower prices than last year, will probably make the increase in the spring pig crop nearer 10 per cent than the predicted 6 per cent.

It follows, therefore, that a substantial price slide is inevitable in the fall of 1958. This will be carried over into 1959. This price slide is expected. It

will come as no surprise—except perhaps to some politicians hungry for an "issue."

(It's extremely unlikely that hog prices will be as low next winter as they were in the winter of 1955-56. In the first place, we will have 10 million more people to feed next winter than we had 3 years ago. On top of that, we'll have a reduced output of beef in 1958, whereas in 1955 beef marketing was also at a cyclical high.)

We're not helpless when it comes to alleviating unfavorable hog prices at the low point of the cycle. However, *we must be careful that the measures we undertake don't further aggravate the problem.*

We must recognize that the basic cause of low hog prices next winter will be the rapid build-up in hog marketings. Most of this build-up will have occurred *outside* the Cornbelt, and on the farms of "in-and-outers" in the Cornbelt. In the main, these farmers are the less-efficient hog producers. When the corn-hog ratio is favorable, they expand. When it becomes normal, they shift to something else.

The really efficient hog producers in your community have pretty stable operations from year to year. The size of their hog enterprise is geared to their total farm operation and their feed supply. They're not the ones, in the main, who cause variations in the hog cycle.

Any measure taken to underwrite a profitable operation for the inefficient producer or for the marginal area will merely postpone the time when the efficient producer can experience the kind of market situation he has enjoyed for the last year and a half.

**One pair of meadowlarks may save as much as 5 tons of hay by destroying insects.**

Those are the facts about pigs and prices. Now to the politics:

In spite of the well-known facts, next fall's pre-election wailings of politicians will be louder than a pen full of squealing pigs.

I recall so well the pressures generated 3 years ago for government to do unsound things in the hog market. I was then Assistant Secretary of Agriculture, with general responsibility for the marketing activities of the Department.

All kinds of proposals came forward, from members of both political parties. Most of them were no doubt made in good faith. Some of them were skillfully backed with organized political pressure. Others rose rapidly like a satellite, but soon burned out in the atmosphere of common sense.

One proposal which had wide currency in the fall of 1955 was for the government to pay a subsidy of $5 per hundredweight on all sows and gilts marketed. The idea behind this proposal was to encourage the marketing of she-stock, and thus to reduce the number of pigs farrowed in the months ahead.

**The European corn borer last year destroyed almost 181 million bushels of corn grown for grain, worth $158,-841,000.**

Apparently the politicians behind this plan weren't aware that the net effect of it would be to *increase* farrowings—not decrease them. Producers could get a litter out of an added number of gilts, then sell them as young sows and still collect the premium. It didn't take long to see through that one.

(One well-informed hog grower from Iowa sent a telegram to Washington in a semifacetious vein, "Talk around here of the proposed $5 subsidy on sows and gilts is making farmers ask 'Where can I find another boar? If the government is going to do that, I'll get into the hog business'."

Another producer wired thus: "If that measure goes through, I'll build a railroad spur to my farm. The trucks won't haul them in.")

The remedy most frequently advocated by the politicians was for the government to "announce a floor under hog prices." I recall sitting one day in late 1955 in the office of the Secretary of Agriculture with a group of Midwestern congressmen from half a dozen states. Hogs were selling for around $12. That hog producers were in distress was beyond argument. The question was what to do about it and when.

The spokesman for the congressional group argued for the immediate announcement of a $15 floor under hog prices, at the farm level. Another congressman thought it should be $18. Both of them contended that the government really wouldn't have to buy very many, if any, hogs. Just the mere announcement that the government stood ready to buy hogs at $15 (or $18) would quickly bring the market price up to that level, they contended.

A perishable commodity like hogs or cattle (which soon becomes pork or beef) must be moved into consumption relatively soon after marketing. Unlike government-owned stocks of wheat, corn, or cotton, they cannot be stored for very long periods. When pork reaches the market, *you either sell it or you smell it.*

The government rejected both of the above proposals. If either of the proposed programs had been adopted in 1955-56:

- Hog numbers would not have adjusted, and we would never have experienced anything like $20 hogs in 1957.
- The floor established by the government in 1955-56 would have become the ceiling.
- Marginal producers would have stayed in the business—and even tried to expand.
- By this time hog producers would be facing production quotas of some kind, and hog production would be moving out of the Cornbelt, just as corn production moved out under price supports and production allotments.

But the government didn't stand idly by when hogs got to $12 three years ago. It instituted a broad program of purchasing pork and pork products with Section 32 funds. It bought over $100 million worth of pork and pork products during the low-price period. These were distributed through the school lunch program, to needy persons in this country, and to some extent in foreign relief operations. Moreover, a substantial quantity of lard was programmed for sale abroad for foreign currency.

The government purchased about all of the pork and pork products it felt could be distributed without seriously interfering with distribution of pork products in the commercial markets.

At the same time, the government teamed up with many sectors of the total pork industry in a broad pork promotional campaign. The program was effective.

**Proper sanitation and ventilation can help reduce dairy calf death losses. Several state colleges report that 25 per cent of the dairy calves in a herd may die before reaching maturity. Scours and pneumonia cause a high percentage of the losses. Navel infection ranks third in calf losses. This problem can be greatly reduced by disinfecting the navel of the new born calf with iodine.**

The point that needs to be emphasized time and again is that because the Secretary of Agriculture in the winter of 1955-56 resisted tremendous political pressure, from both parties, to do unsound things in the hog market, hog marketings *did* adjust.

Our good hog producers who produce by far and away the bulk of our total pork supply have experienced a couple of pretty good years. And they

haven't had the government placing a ceiling on the number of hogs they can market.

So when this flood of campaign oratory bursts upon you in the late summer of 1958, then will be a good time to assert the fundamental proposition that farmers are not pawns on the political chessboard of America, to be moved about by some capricious player whose sole object is victory at the ballot box.

The role that government must play in American agriculture is both vigorous and vital. But it must be based on economic soundness rather than on political expediency.

We will make genuine progress in solving our perennial farm problem only when the trinity of pigs, prices, and politics is expanded to include *prudence and principle.*

## Soil Insecticides Increase Plant Stands

Applying soil insecticides to cornfields before planting increased plant stands an average of 7 per cent

Steve Moore, Illinois entomologist, says these insecticides control pests that feed on the seed and underground portions of corn plants. Such pests as wireworms, rootworms, and grubs cause poor germination, lodging and reduced yields.

Moore recommends using either aldrin or heptachlor. They can either be broadcast or applied in the row as a band treatment. Broadcasting requires 1½ pounds of insecticide per acre. Disk it into the soil immediately. The band treatment requires only 1 pound of actual chemical per acre. Apply at planting time in the starter fertilizer or as a spray behind the planter shoe.

Research tests show that aldrin and heptachlor are equally effective. But broadcasting produced a 34 per cent larger plant stand than the row treatment. The combined averages of both the chemicals showed a 7 per cent increase in plant stand and 4 bushels per acre average increase in yield.

Moore says the effects of aldrin and heptachlor also carry over from one year to the next. The first year after application 12 test fields out of 15 showed a 7 per cent increase in plant stand. Three fields showed no difference. The second year the same 12 fields showed an additional 3 per cent increase in plant stand. During the past four years, 66 per cent of several hundred fields tested showed a profit over and above cost of treatment.

*—University of Illinois*

# How Much Weight Do Steers Lose in Transit?

**Research shows that time on the road is the most important single influence whether you ship by rail or truck . . .**

Condensed from Acco Press

*Charles B. Brotherton* and
*Neff H. Tippets*

HOW much weight, on an average, do cattle normally lose when moving to market by rail or truck?

Are some types of cattle affected more than others? What are the best conditions under which your cattle can be moved?

All these questions have grim dollars-and-cents significance to cattle producers who sell on the basis of the weight of animals at marketing destination. Obviously, the greater the loss, the lighter the purse on this type of transaction.

Answers can be given if you keep in mind that figures involved can only be averages. They cannot be precisely calculated to the last decimal point by any means.

From research studies some facts stand out clearly.

The first is that time in transit is the most important single influence affecting the weight of your cattle between the time they are weighed on-car at the shipping point and the time they are weighed off-car at destination.

Almost three-fourths of the variation in shrinkage rates can be accounted for by the time factor alone, under conditions where transit time varies and most of the other important variables are known.

The shrinkage rates are gross rates, computed from on-car and off-car weights with no fillback period at destination involved.

Shrinkage rates at the beginning of the shipment are usually very heavy. They average about 4 per cent after 2 hours in transit. This is true of both stocker-feeders and fat animals.

In the first 8 to 10 hours of shipment, fat animals shrink slightly more than stocker-feeders. This loss is almost entirely

loss of belly fill (excretory shrinkage).

However, as time in transit increases, stocker-feeders lose their advantage over fat animals.

In fact, after the shipments have been in transit long enough for a feed and rest stop to have occurred (28 to 36 hours), fat animals show a shrinkage percentage about 2 per cent less than stocker-feeders.

**About half a million acres of productive farmland in U. S. is lost each year by erosion; another million acres is taken up each year by roads, homes, factories, airfields, etc.**

### Two Reasons

There are two ways of accounting for this. One probability is that fat animals have a smaller stomach capacity compared with their body weight. Hence the belly shrink is less and doesn't occur over as long a time.

The other is that fat animals, used to confinement in pens, take on a better fill at feed and rest stops than stocker-feeders.

After the first feed and rest stop, the shrinkage rates increase very slowly for both stocker-feeders and fat animals—only a little over 1 per cent for each additional day en route.

Compared with the beginning of the shipment, loss of belly fill is very slight. Much of the shrinkage in the latter stages is undoubtedly tissue shrink, actual loss in the weight of the animal's meaty tissues.

The average shrinkage rates quoted above are, of course, subject to some variations in individual cases.

Now, as to the second question:

Heifers s h r i n k more than steers but the difference is very slight.

Brahmans and Brahman crossbreeds shrink at almost the same rate as the English breeds.

Weight and finish of the animals appear to have little bearing on shrinkage rates, either for stocker-feeders or for fat animals.

What about conditions of shipment?

No distinction can be made between shipments made by truck and those made by rail. Data were inadequate for such a comparison. In general, hauls under 24 hours are almost always made by truck; longer hauls, by rail.

The effects of temperature and weather during shipment are difficult to measure. However, shrinkages were heavier in the summer months than during the rest of the year.

Heifers showed slightly greater shrinkage increases during hot weather than steers. Brahmans

and Brahman crossbreeds experienced about the same shrinkage in the summer as the English breeds.

Now, to challenge a popular assumption: When shipments are made under nearly identical conditions, gross shrinkage rates are very uniform. Wide variations in shrinkage rates between individual shipments that so many producers seem to expect just don't occur, judging by available data.

### Spring Shipments

To illustrate, take shrinkage data on spring shipments of steers from feedlots in the Phoenix, Ariz., area to packers at Los Angeles. On these shipments, distance, time en route, mode of transportation, and preweighing conditions were almost identical.

These data show shrinkage up to 4.4 per cent for 6 per cent of the cattle; 4.5 to 5.5 per cent for 24 per cent; 5.5 to 6.5 per cent for 42 per cent; 6.5 to 7.5 per cent and over for only 9 per cent. This covers 98 truck loads, averaging about 30 steers per load.

Summarizing these data, steers shipped in the spring had an average gross shrinkage of 6 per cent. Eighty-five per cent of the shipments showed shrinkage losses ranging from 4.5 to 7.5 per cent.

Where cattle are placed on hay and water at destination for some time before final weights are taken, a most interesting situation is revealed.

Say that the shipment has been relatively long and that fat animals have lost as much as 10 per cent. Give these same cattle up to 48 hours in the yards and the shrinkage will be cut back to 5 per cent or a little more.

**About 1/3 of America's 15 million ex-servicemen have obtained a G.I. loan.**

### Net Shrinkage

Increase that fillback period beyond 48 hours and it doesn't seem to make any appreciable further difference. The net shrinkage will remain around 5 per cent.

There's no explanation for this, on the basis of present data. It doesn't seem to pay to hold cattle in the yards over a day hoping to increase the number of pounds regained.

A sizeable part of the 5 per cent net loss in weight is probably tissue shrinkage.

This can't be regained as rapidly as excretory shrinkage.

There remain other factors which are now the subject of research at several Western state agricultural experiment stations. This research is designed to trace still further the relationships between a number of variables and shrinkage rates and to add information on this subject.

# Let's Cut The Feed Bill

**Nearly half of the milk check goes for feed. Here are ways to keep feed costs to a minimum.**

Condensed from Guernsey Breeders' Journal

*H. A. Keener*
University of New Hampshire

IT'S not the size of the milk check that counts. The important thing is what is left after the feed bill is paid.

This is particularly true for dairymen in areas such as New England, where practically all concentrates are purchased. According to the 1956 New Hampshire DHIA Report, the average cow ate $96 worth of grain and $120 worth of forage. Putting it as a percentage of the milk check, 20.8 per cent went for grain and 25.5 per cent for forage. Thus, a total of 46.3 per cent, or nearly half of the milk check, went for feed.

With these figures in mind, the feed bill would appear like a good place to start in trying to increase profits.

## Culling

The first place to reduce the feed bill is to eliminate unprofitable cows. The next step is to cull heifers which are not likely to develop into profitable cows. I just can't go along with the idea that an empty stall is in general a bad thing. If a cow isn't capable of making a profit, the feed should be saved and the extra labor used to care for the remaining cows.

If the stall can be filled with a good cow, that is the profitable thing to do. In raising heifers, capital should be invested only in those animals which are likely to pay the greatest return. To know what cows are profitable, we must have production records.

## Better Feeding

After getting rid of the unprofitable animals, the next thing is to do a good job of feeding the remaining animals. Feeding tables and various types of gadgets put out by the Extension Service and feed companies tell how much grain to feed, taking into consideration the quality of the hay and the weight and the

Reprinted by permission from Guernsey Breeders' Journal, Peterborough, New Hampshire

test of the milk. These charts are good, but they cannot take into consideration the individuality of the cow. This is where the "know-how" of an experienced herdsman is important.

**Australian aborigines pull the fingernails from the body of a corpse before burial, so they cannot scratch their way out of the grave, and become vampires.**

The stimulus or urge to give milk comes from within the cow. The feed simply provides the raw materials from which the milk is made. If a cow is losing body condition she is not eating enough to satisfy her needs and the experienced herdsman will feed more grain if he knows that the cow can handle it. If a cow is putting on excessive flesh the herdsman will cut grain feeding and save some money. Attention to details pays big dividends.

### Maximum Use of Forage

In general, *home-grown* forage is the cheapest source of nutrients for dairy cattle. In New Hampshire DHIA, approximately 75 per cent of the average cow's nutrients come from forage, yet this represents only 55 per cent of the total cost of feed. High quality home-grown forage should be fed in the greatest possible quantities. A good forage program is one of the keys to profitable dairying.

If the quantity of good early cut forage is limited, milking cows and calves should receive preference. In relation to total need for nutrients, these animals need more nutrients per unit capacity than the yearling heifers. The heifers can get by much better on poor quality roughage, although generally more economically on high quality forage fed with little or no grain.

### If Forage is Scarce

Many dairymen in certain areas do not have enough hay to last all winter at the usual rates of feeding. The problem is how to meet the situation most economically. One frequently finds that he cannot obtain nutrients from purchased hay any more cheaply than he can from grain or the pulps. He then comes to the point where hay and concentrates are competing.

Although we are interested in buying nutrients as cheaply as possible, we must keep a few important principles in mind. (1) A cow or other dairy animal should be fed at least one pound of hay or hay equivalent from other forage per 100 pounds of body weight per day. (2) The inclusion of some hay in the ration is usually better than only silage as the sole forage. (3) In buying hay to feed remember

that high quality has virtues that may outweigh low price per ton and even low cost per unit of digestible nutrient or net energy. A cow's digestive tract can handle just so much, and if it is filled up with bulky low feeding value forage, the cow may not be able to consume enough nutrients to meet her needs.

### Cheapest Source of Feed

After we have met the basic forage needs of the animal, the next thing is to supply the remaining needs as economically as possible. If high quality purchased forage can supply nutrients economically enough, it should be used to the maximum. The next things to consider might be citrus and beet pulp.

We did some work here at the University of New Hampshire which indicated that dried citrus pulp could replace successfully up to 50 per cent of the grain of milking cows if the protein content of the grain was raised from 16 to 20 per cent. Last year, many dairymen saved considerable money by feeding citrus pulp in the place of some of the grain. This year, however, the price of citrus pulp has increased and much of the advantage has disappeared.

Molasses is an economical source of energy, but is messy and requires extra protein. In many cases, the most economical source of purchased nutrients is simply a good grain mixture. It is readily available and easy to feed. In order to make a decision as to what feeds to buy, the following procedure can be used. Divide the price per 100 pounds of the feed by the values given in Table 1. for therms net energy per 100 pounds. Values have been calculated for a few feeds at New Hampshire prices to illustrate the procedure. Everything else being equal, the lowest price per therm would indicate the best buy.

**A mature apple tree may have from 30,000 to 50,000 blossoms in a year. If only two or three per cent of the blossoms set fruit, the tree will produce a normal crop.**

Under these conditions, molasses, citrus and beet pulp and grain would be the most economical. Protein content is given to show what feeds would require a higher protein grain in order to give the animal adequate protein. In other parts of the country the situation might be entirely different, depending on availability of different feeds, nearness to source of production, and freight rates.

### The Price of Grain

The bag or ton of grain often can be purchased at a much lower figure than the usual list price. In buying feed grain, there are

a few important things to remember. (1) The integrity of of the manufacturer is important. (2) No manufacturer has trade secrets which permit him to make a better dairy feed than any other wide awake manufacturer. (3) Frills and fancy claims usually mean much more to the dairyman than to the cow. (4) The size of a particular feed business is much less important than the economy with which the business is conducted.

**About half of the land area of the U. S. is used for livestock production.**

With these things in mind, the feed purchaser also can take advantage of certain discounts which may save additional money. These savings—listed below—are typical of those offered by several New Hampshire feed manufacturers.

1. Fine feed vs. coarse. A fine feed generally costs about $2.00 per ton less than a coarse feed of equal quality. Our New Hampshire work indicates that in general the so-called "fine feed" is consumed about as readily as the coarse, and is more digestible.

2. Quantity purchases. Many manufacturers reduce the price for quantity purchases. This reduction may vary from $1.00 to $2.00 per ton for one to four tons, $2.00 to $3.00 for five tons, and $5.00 or $6.00 for 30 tons. In other words, you can expect the price to drop as the size of your purchase increases.

3. Bulk delivery. This is a very satisfactory way to purchase feed on many farms if larger quantities are used. Under certain conditions there may be bridging, and pelleting sometimes is carried out to prevent separation of fine and coarse ingredients. Savings run from $5.00 to $8.00 per ton, but there is no return from bags and there may be a charge for pelleting. At least two tons of a particular feed must be ordered.

4. Cash payment. Discounts for cash run from $1.00 to $2.00 per ton. Assuming that your bill runs for a 30-day period, this would be equivalent to approximately 15 to 30 per cent interest per annum. I think it is easy to see that it is much cheaper to do your banking with a bank at six per cent per annum. Your feed manufacturer does not want to be your banker.

5. Pick up at mill. Many smaller feed manufacturers will allow you the cost of delivering feed if you pick it up. These discounts range between $1.00 and $4.00 per ton, depending on the manufacturer and the size of the order.

6. Empty bags. Bags are worth between $2.40 and $3.00 per ton of feed if kept clean and in good condition. For this reason they are worth caring for and add up to a considerable sum over the period of a year.

In order to arrive at the total savings, we will assume that a good coarse feed is listed at $76.00 per ton delivered.

| | Bags | Bulk |
|---|---|---|
| Discount for fine | $2.00 | $2.00 |
| Disc't for quantity | 2.00 | 2.00 |
| Discount for cash | 2.00 | 2.00 |
| Discount for pick up at mill | 2.00 | |
| Discount for bulk | | 5.00 |
| Value of bags | 2.60 | |
| Total | $10.60 | $11.00 |
| Net cost of feed | $65.40 | $65.00 |

On a 40-cow milking herd, the total savings under New Hampshire DHIA conditions would amount to approximately $530 per year. All of this suggests that the ordinary dairyman can be well paid for figuring costs and working out ways to get a little more for a little less. This is one of the secrets of operating any business profitably.

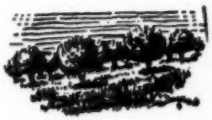
**Here's a calorie comparison that may surprise you. A medium-sized potato — boiled, pressure-cooked, or baked—provides only about 100 calories, approximately the same as a large apple or orange, or half of a large grapefruit, according to the U.S.D.A.**

**TABLE I**

| FEED | Crude (1) Protein (%) | Net (1) Energy Therms—100 lbs.) | Price Per 100 Lbs. | Cost Per Therm (Cents) |
|---|---|---|---|---|
| Alfalfa hay (1st cut) | 15.3 | 40.6 | $2.50 | 6.2 |
| Mixed hay | 10.3 | 38.6 | 2.30 | 6.0 |
| Timothy hay | 6.6 | 37.3 | 2.30 | 6.2 |
| Late cut timothy hay | 5.3 | 27.2 | 1.75 | 6.4 |
| Alfalfa pellets | 15.9 | 43.6 | 3.23 | 7.4 |
| Beet pulp—dried | 8.8 | 76.1 | 3.58 | 4.7 |
| Citrus pulp—dried | 6.2 | 75.0 | 3.37 | 4.5 |
| Grain 16% | 16.5(2) | 75.0(2) | 3.70 | 4.9 |
| Grain 20% | 20.5(2) | 75.0(2) | 3.81 | 5.1 |
| Molasses | 3.0 | 71.3 | 2.54 | 3.6 |
| Oat mill feed | 4.1 | 24.0 | 1.25 | 5.2 |

(1) From Morrison's **Feeds and Feeding,** 22nd edition except for (2)

# Dwarfs in Your Back Yard



**The home orchard is making a comeback, thanks to all pint size trees six to eight feet tall. They are easy to spray, pick and prune . . .**

Condensed from Pennsylvania Farmer

*Sherwood Thayer*

TODAY any one who has a back yard can enjoy a few dwarfs. Not the little bewhiskered jolly fellows that were fascinated by lovely Snow White in Walt Disney's cartoon, but dwarfs that can be fascinating to you—dwarf fruit trees.

Almost everyone has stopped at a fancy fruit stand and purchased a beautiful big red apple for ten or fifteen cents. Do you know that this apple can be grown on a dwarf tree right in your own yard?

For some reason there is a general opinion that raising fruit is a mysterious complicated process which only a select group can understand; that the virulence of many diseases and the numerous unknown insects give little hope of success in this venture. This opinion is erroneous and the fact is that you can raise this big red apple, or any other apple, peach or pear of your choice. The small expense and the little time required will surprise you.

## Economy Orchard

Let us go a little further and look at a few more facts concerning this little economy orchard. To make the whole story more interesting we should delve into some horticultural background. How can fruit be raised on dwarf trees and, in fact, just what is a dwarf tree?

It was discovered that when a wanted variety was budded or grafted to a certain rootstock, the resulting tree was always small. It was also found that this little tree was healthy and hardy and came into bearing in three to four years instead of seven to ten years. Therefore the size was reduced to six to eight feet rather than 35 to 40 feet of the standard tree and yet bore the exact duplication of fruit in size, flavor, color, etc. So there we have it, dwarf fruit tree.

## Pears from Quince Stock

Dwarf pear trees are produced by grafting the pear shoots on quince stocks. Many years ago plant propagators discovered cer-

Reprinted by permission from Pennsylvania Farmer, Harrisburg, Pennsylvania

tain strains of apple that have a dwarfing effect on the variety grafted upon them. These they propagate asexually, that is, from cuttings of root or top, not from seed. Thus they get a uniform stock on which to graft and are certain that the trees which grow from them will be uniform in their dwarf habit of growth. As a matter of interest, there are two general types of dwarfing stock for apples, the Paradise which is used in producing the trained trees one sees in greenhouses or trained on walls on rich men's estates and the Doucin which produces trees such as discussed here.

**It is estimated that Man has lived on earth some 250-000 years but earth has lived 5,000,000 years.**

You might think these trees would be expensive and difficult to raise, but this is not the case. They are grafted or budded at the nursery and can be bought, all dwarf size, in apple, peach and pear, for only four or five dollars each. The trees are two or three years old when you buy them, so will be bearing delicious fruit after one or two years.

We bought 14 dwarfs and, 15 months after planting, we picked enough apples, from a tree only four feet high, to make one big, juicy, apple pie. This was indeed a proud dish on our table yet only the first of many such delicious dishes which we have enjoyed over the seven years since planting our little orchard. With reasonably good care these same trees will give us and our friends good fruit for another 20 or 30 years. What else will give such a return for five dollars?

Here is another fact to note. The commercial grower selects varieties that are good looking and good for shipping, but not necessarily the best quality. He also must pick the fruit before it is fully ripened so that it will withstand packing and shipping. With dwarfs, you can select the dessert varieties, those with highest quality and you can let them fully ripen on the trees, which adds immeasurably to their flavor. This means that you not only can grow fruit in your yard, but fruit that is equal or superior to the best you can buy.

### Tree-Ripe Fruit

So, if you like tree-ripe fruit for eating fresh, for cobblers, pies, jellies, or jams, or for freezing or canning, then the dwarf orchard is for you. Just recently I noted an advertisement for apples at 26 cents per pound. At this rate on the market, one little dwarf tree can grow $20 worth of apples for you in one season.

I stated above that a few dwarfs would require little time or expense. I should add that

you wouldn't have to be experienced to raise them. These trees will grow in almost any garden soil. When received, they should be carefully planted according to the instructions accompanying the shipment. In planting it is well to notice the location of the union of stock and scion. This is usually well above ground line, but it may be low and the tree planted rather deep. In this case, roots may be thrown out above the union and the tree may become standard and lose its dwarf characteristics.

Dwarfs should be cultivated a little each summer and a good fertilizer added once a year—two or three applications if the soil is very poor. For 2 or three years they will require little or no pruning. After that it will be almost impossible to injure the tree, even with heavy pruning. It would be best, however, to study a few simple pruning rules.

To this point we have simply outlined the standard practice that would be followed on any shrub or tree that you would want to plant. It is no more difficult than your tea roses.

You will say that they must be sprayed. Any and all of our fruits must be sprayed in order to have healthy trees and fruit free from the many insects and diseases which plague them. Here again are difficulties which have been greatly reduced by those who have a deep interest in pomology.

**All-Purpose Sprays**

In past years spraying required special mixed chemicals and a very extended knowledge of insects and diseases in order to know what to mix and when to spray. Today we can buy small packages of all-purpose spray. This can be easily applied with a hand sprayer costing around $10. Since dwarfs grow to a height of only six to eight feet, the hand sprayer can easily do the job. Your county agent or hardware man can supply a spray schedule. For best results there should be six or seven sprays each season. At 75 cents per tree and approximately one hour per tree each season, insects and diseases can be controlled. The commercial grower with his 35- to 40-foot trees must use a powerful sprayer costing as much or more than a new car. Yet with your little hand sprayer you can equal his results and raise quality fruit.

Before concluding this article, I think there is another point of interest in favor of the dwarfs. We think of fruit trees planted in a group which we call an orchard, however small it may be. If you live in town, it is surprising and very interesting how many ways the dwarfs can be

planted to add to the picture of your landscape. They can be planted in the front or side lawn, interplanted with other trees or shrubs, as border screening and protection, or even with flowers and vegetables between them.

**Asparagus as Lawn Border**

Our lot is only 50 feet by 150 feet and, along with 14 dwarfs we have other fruit, vegetables and flowers with plenty of open lawn for clothes line, badminton set, picnic table, etc. We have followed a border planting. Along one side of the lot are dwarfs with black raspberry bushes between them. On the other side are more dwarfs, with flowers and vegetables between, and, across the back, combination of dwarfs and an asparagus row. After cutting delicious asparagus for six to eight weeks in spring, the shoots are allowed to grow out to their thick, green, fern-like foliage, which makes a nice border with the dwarfs.

Dwarfs are not only for the city dweller. The farmer is not cramped for room. However, pests are increasing and we are more critical of defects in the fruit we use. So there is now no place for the home orchard of a generation or two ago. With those big trees, it was a choice between wormy, scabby apples or expensive, commercial spray equipment. The home orchard can be replaced by dwarf orchard, requiring no more care or equipment than the vegetable garden.

**Landscaping Tips**

The above examples give a few ideas to show the versatility of the dwarfs. There are many possibilities and you can choose to fit your own situation. They can be used in any desirable combination that the flowering shrubs are used and actually outdo them in color.

The flowering shrubs are green through the summer with a few short weeks of bloom. The dwarfs not only have a heavy deep green foliage in summer but also have two, rather than one, color period. In spring the pear has a beautiful white blossom, the peach a delicate pink and the apple a white and pink bloom. Then in the fall there is the additional color of the fruit, red or yellow of the Delicious, the deep red of the McIntosh, or the brilliant red of the Jonathan. This will again add an abundance of color to your grounds after the shrub has lost its bloom.

I live in Carlisle, Pa. It is not a magic spot to grow things nor a mecca for dwarf trees. They are hardy little trees and will thrive from the Great Lakes to the Gulf and from the Atlantic to the Pacific. If you get satisfaction in raising some of your own food, you will enjoy dwarfs in your back yard.

# Seven Steps to Higher Soybean Yields

**Many Hoosier farmers rely on these proved practices to boost their yields . . .**

Condensed from The Furrow

*A. H. Probt,* Purdue University

LAST YEAR Indiana farmers harvested a record soybean crop of nearly 53 million bushels. Their average yield of 24.5 bushels per acre was also a new high and 12 per cent above the Indiana 1946-55 average of 21.8 bushels.

The following seven steps have enabled many Hoosier farmers to bring about this increase in their soybean yields:

1. Select the proper variety or combination of varieties for your area. Several high-yielding, well-adapted varieties are available for all soybean-producing areas. Keep up-to-date as these varieties are continually being improved upon.

To spread out the combining season, it is good insurance to grow several varieties of different maturities on one farm. Under some circumstances it might be wise to blend several varieties and grow them as a composite mixture of varieties.

In trials conducted at Purdue, the mixing of several varieties of different maturities and with resistance to different diseases had a stabilizing effect on yields from year to year in tests conducted from 1952 to 1955. No blend was significantly higher in yield than the best variety in the blend in a given year or for the average for the period. However, since one could not accurately predict which variety would be highest in yield each year, the blend was important in obtaining the maximum yield in a given year.

2. Planting enough viable seeds to give a final stand of 6 to 8 plants per foot of row is important in getting top yields. Soybeans generally give highest yield when planted in rows narrower than those ordinarily used for corn. This is particularly true in mid-western soybean - producing areas. Narrow rows are especially important in obtaining highest yields with the earlier-maturing and shorter-growing varieties.

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3. Soybeans should be planted after the soil warms up. Full-season varieties generally yield best when planted early. Short-season varieties adapted for any given area, can be planted over a long period and still produce their maximum yield.

4. Soybeans will produce their own nitrogen if properly inoculated with nodule bacteria. Although bacteria persist in the soil for a number of years after once established, it is usually good insurance to reinoculate at least every other time in a rotation.

5. Although soybeans are known to have a highly variable response to direct application of fertilizer, it is well established that soybeans produce highest yields under conditions of high fertility. The use of soil tests to determine fertilizer needs and the maintenance of high fertility are of prime importance in good soybean production. Proper placement of starter fertilizer is also important. It is generally recommended that high analysis starter fertilizer be banded to one side and below the seed for best results.

6. Soybeans should be cultivated only deeply enough and frequently enough to control weeds. Use of the rotary hoe when the beans are first emerging and until they are 4 to 6 inches tall, followed by two shovel cultivations, usually is ample to do a good job of weed control. Excessive cultivation leads to unnecessary root pruning and reduced yields.

7. High yields count only after they're in the grain bin. One of the most important jobs in soybean production is good combining. Losses up to 20 per cent of the crop are not uncommon where combines are not properly adjusted and operated. Cylinder speed should be adjusted to avoid cracking and to do a thorough job of threshing. The sickle should be kept close to the ground to get all the seed. Four to five seeds per square foot left on the ground are the equivalent of 1 bushel per acre loss. Also 5 to 6 pods per foot of row is a loss of 1 bushel per acre. These are costly losses which can be avoided with careful combine operation.

**Purchases of dairy products for price support during the current marketing year which ends March 31, 1958, will be equivalent to about 5 per cent of milk production if rate of purchases so far is maintained. The 1956-57 proportion was 4 per cent. Consumption of dairy products per person is about the same as last year — milk output is up a little.**

# Seed Treatment Is Low-Cost Insurance

**Will it pay you to treat seed? The answer depends on conditions discussed here . . .**

Condensed from Crops & Soils

TO TREAT or not to treat may be your question as you prepare seed for planting.

Seed treating for small grains has been recommended for some time but the number of farmers who actually treat their seed varies with crops, years, and location. Drill box surveys of the past few years have indicated that less than half treat their seed regularly even though it proved profitable in most years. A high proportion of the hybrid corn seed is chemically treated since it is produced commercially and treated in the cleaning, grading and bagging operation before it gets to the farmer.

Seed treating does two things: (1) It surface "sterilizes" the seed, thereby killing all disease organisms on the seed coat, and (2) it protects the planted seed from attack by seed-decaying and seedling-blight organisms. It must not injure the germinating seed.

Seed treating may make good seed better but don't expect it to make good seed out of poor seed. There is no substitute for pure, clean seed of high germination. When it is necessary to use seed which has been damaged in harvesting or storage, treatment may prevent disease and soil organisms from entering the planted seed and lowering germination. But it is not a cure-all for seed and germination problems.

Seed treatment is especially valuable when soil is cold and damp. Germination is delayed under these conditions and disease and mold may attack the seed unless it has been treated. Dry soil or other conditions which delay germination also

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give disease organisms longer time to attack the seed. These organisms may be in the soil or on the seed. Preper seed treatment should control them without harming the seed.

**The median price of new homes in 1957 was $14,800. This is 1.4% above the 1956 median of $14,600.**

Seed treating is most effective in controlling seedling diseases, the covered smuts of the small grains and loose smuts of oats and sorghum. Such seedling diseases as molds, decay, some root rots and blights which rob the seed of sufficient food reserves to produce a seedling will be controlled by proper seed treatment. Loose smut of barley and wheat and smut of corn are not controlled by seed treatments.

Loose smut infects plants during the pollination period and is too deep in the barley and wheat kernel to be controlled by seed treatment. Covered smut affects the kernel only but loose smut affects the kernel, hulls, and chaff and is generally noted by the blackened headless stem in the field. Covered smut remains in the kernel until the outer membrane is broken usually at harvest.

For many years the hot water treatment was the only known control of loose smut in barley and wheat. It required special equipment and exact control of temperature and time to prevent damage to germination. As a result it was not often used.

Recently a new method for controlling loose smut in barley has been developed. It takes advantage of the fact that barley seed survives longer without air than the fungus organism which causes loose smut.

In this new method, half-filled bags (to allow for swelling of the seed) of barley are soaked in water at 70° to 75° for 2 to 4 hours. After the presoak period the bags drain for 30 minutes and are placed in an *air-tight* container such as a milk can or oil drum. The container must be airtight to prevent germination of the barley. The length of time that the grain is left in the container depends on the temperature. If the average temperature (average of the high and low for each day during treating) is 75° the seed should be left in the containers for 60 hours, at 80° for 50 hours, at 85° for 40 hours and at 90° for 30 hours.

The seed could be planted immediately after removal but a more satisfactory method would be to dry the seed and chemically treat for other diseases before planting.

The Texas Agricultural Experiment Station reports success

with this "airless" (anaerobic) method on wheat. Presoaked seed stored in airtight containers for 110 to 120 hours reduced the incidence of smut from 17 per cent to less than 7 per cent. The addition of chlorox or purex at the rate of 1 pint to 30 gallons of water reduced bacterial growth and undesirable odors in the process.

The chemical seed treatments on the market may be divided into two main types—the organic mercury compounds and the organic non-mercury compounds. The organic non-mercury compounds are represented by *Arasan, Spergon, Phygon,* and *Orthocide 75* and others. These are excellent for treating corn, grasses, vegetable and flower seeds but not generally recommended for use on oats, barley, or wheat.

Mercury seed treatments commonly sold are *Ceresan M, Panogen, Agreox, Mergamma, ME-MA,* and *Gy-trete (Setrete)* and others. These are not recommended for treating corn, grasses, vegetable and flower seeds since they may injure the germination of these crops. The mercury seed treatments give good control of covered smuts of barley and wheat and both covered and loose smuts of oats.

Wheat should be seed-treated for stinking smut or bunt, seed decay, seedling blights and some root rots. Since the spores (smut "seeds") of most smuts are carried by the the wind, seed treating is beneficial almost every year. "Treated seed will produce stronger seedlings," says an Illinois report. Use a mercury-containing treatment.

**Fog is composed of tiny droplets of water, so very small that it would take some five billion of them to fill a teaspoon.**

For oats, use mercury-containing seed treatments for control of seed decays, root rots, seedling blights, and covered and loose smut. The Helminthosporium blight epidemic of the 1950's might have been avoided if all seed had been treated.

In barley, seed treatments with the mercury types of chemicals will control seed decay, root rots, seedling blights and leaf stripe. Leaf stripe, identified by long narrow streaks on the leaves prior to heading, will often be severe enough to kill the plant. Treatment may also control a form of loose smut but this should not be confused with the more common brown loose smut.

Since sorghum germinates slowly in cool temperatures, seed treatment may help. Either type of treatment can be used, and manufacturers instructions should be followed.

### Flax Benefits

Of all the small grains, flax stands to benefit the most from proper seed treatment, says A. W. Henry of the University of Alberta. Flax is not susceptible to smut but seedling blight and root rot are particularly bothersome. The seed coat of flax seed is tender and often damaged, allowing disease organisms to enter. Organic mercury treatment is most commonly recommended for flax but some non-mercurial chemicals also provide protection. The fungicides are most often used as a dust on flax and at higher rates per bushel than for cereals.

**The United States is the world's largest exporter of farm products. In the fiscal year 1957, the U.S. supplied 22 per cent of world agricultural exports. The output of 60 million acres (1 acre of 5 of cropland) moved abroad.**

### Helps Cotton

In cotton, treatment stops seed borne diseases such as anthracnose, which causes seedling damping-off and boll rots; asochyta, which causes "wet weather" blight; and angular leaf spot, which causes seedling blight. It also gives some protection from soil-dwelling seed rots and damping off.

Cotton is especially affected by seedling diseases and the Georgia Crop Improvement News warns that a good treatment with a mercury compound will reduce the amount of seedling diseases in cotton but in wet, cold weather the mortality among seedlings is still likely to be high.

Seed treatment is not generally recommended for soybeans in the Midwest, says Donald W. Chamberlain of the U. S. Regional Soybean Laboratory, Urbana, Ill. Soybeans often compensate for reduced stands by increased branching which maintains yields. Under poor conditions and low seed quality the non-mercury fungicides will help control seedling loss from purple seed stain disease and damping off. But on land never before in soybeans, seed treatment also may reduce root nodulation.

Recent Wisconsin tests show that insecticide treatment of corn and lima beans at the same time as the fungicide treatment helps control seed corn maggot and wireworms.

### What About Forage?

For forage crops, seed treatments have been controversial. In most cases few benefits have been demonstrated. Arkansas Farm Research reports that seed treatment offers little if any promise of benefit to the grower which uses alfalfa seed of good quality. New York reports that

quality of seed, soil type, fertility, moisture, and seedbed preparation all proved more important than chemical seed treatment of alfalfa, red clover, birdsfoot trefoil, orchardgrass, smooth bromegrass, and timothy. However, the mercurials were effective in controlling head smut in field bromegrass.

Seed treatment may be applied in a dust, slurry, or liquid with equal effectiveness as long as the chemical is distributed throughout the entire seed lot. Many of the mercurial treatments vaporize and thus come in contact with each seed. For this reason treated seed should stand 48 hours or more before planting to allow fumes to penetrate the seed coat. There is no loss of effectiveness in storing treated seeds for several months if temperatures are kept below 70°. Non-mercurials may be planted immediately after treatment.

Barrel treaters can be used, or the treatment can be added in the seed-moving process, but the effectiveness will depend on how well it is distributed throughout the seed.

Fungicide fumes should not be inhaled. Many treatments also burn the skin. Treated seed should not be used for feed or seed.

And finally in summary, will seed treatment pay? This is your question to answer depending on all conditions discussed here. In Iowa over several years' experiments, it has increased oat yields 3 bushels per acre. In most experiments it has been most beneficial in years when weather conditions were less than ideal.

One thing is certain, seed treatment is inexpensive insurance.

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## USDA Leaflet Discusses Aphid Control

The U. S. Department of Agriculture has just released a new publication on "The Spotted Aphid — How To Control It." Copies of the publication, Leaflet No. 422, are available at County Extension Service offices or from the U. S. Government Printing Office, Washington 25, D. C.

The leaflet describes the physical appearance of the aphid, tells about its development, and explains the damage that it does to alfalfa.

It also outlines the method of control which has proved the most satisfactory in the more than 30 states in which the pest has been found in alfalfa. *—New Mexico A & M College*

# Now They're Leasing Hog Breeding Herds

**More than 1,400 Corn Belt farmers rent meat-type boars and gilts, get supplement on credit and a premium on the pork . . . .**

Condensed from Farm Journal

*Ovid Bay*

UNTIL now most of the hog "integration" activities of feed companies have been in the South or just on the fringe of the Corn Belt.

But the most far-reaching, new, hog program today is *right in the heart of the hog-corn area.*

It's a leasing plan for meat-type breeding stock. Already 650 hog farmers in Iowa and seven surrounding states have "rented" 6,000 in-cross gilts and sows from Foxbilt, Inc., Des Moines, Iowa feed company.

Another 750 farmers have leased in-cross boars which they are using on approximately 10,000 gilts and sows which they themselves own.

**Lease Terms are Simple:**

You pay Foxbilt $3.75 per head for each gilt and each boar. The company delivers the stock to your farm without trucking charge. The hogs have been vaccinated against cholera, leptospirosis, swine erysipelas and tested for brucellosis.

You sign a contract to buy supplemental pre-mixes from the company (to blend with your home-grown grains). You don't pay for these sow and pig premixes until you sell your pig crop, and there's no carrying charge.

At market weight of about 220 pounds, you turn over to Foxbilt one gilt per normal litter, plus one market hog for each 10 sows bred to a leased boar. (The minimum is 600 lbs. of pork.) If the company needs more gilts, it offers the farmer $50 a head.

Foxbilt handles four inbred lines: Montana 1, Minnesota 1, 2 and 3—all meat type. It produces the breeding stock at six Midwest centers under a rigid testing program. Each litter is fed by itself to get weight and feed records at 154 days. The "discards" not saved for breed-

Reprinted by permission from Farm Journal, Philadelphia, Pennsylvania

ing stock have averaged well over 80% No. 1's when sold for slaughter.

Since Foxbilt started this program, its feed tonnage has increased 40% *in each* of the last two years. (Sale of hog feeds by all manufacturers hit record highs in 1957—up 20% over 1956.)

**Like the little boy who swallowed his bubble gum, some things that happen in 1958 may give us a funny feeling, but we don't imagine they will prove fatal.**

"When we started with 400 gilts in 1955, we thought the young farmer needing credit would be our best customer," says Ed Fox, president. "However, most farmers using the plan are established hog men who like the type of our hogs and who prefer to let Foxbilt share some of their risk."

What about that risk sharing?

"Any gilts or boars that die are our loss," explains Fox. "If a gilt proves to be a non-breeder or abnormal, you sell her on the market and keep the sale price for feed and increased weight. Then at market time you turn over a replacement gilt to Foxbilt.

"If for some reason farrowing results are poor, we make adjustments based on averages of all our leases. Averages have generally been quite high. One group of 700 sows averaged 8.4 live pigs farrowed on the first litter and 10.1 on the second."

Naturally, Foxbilt doesn't accept every application. "We can't keep up with demand," explains Fox, "and we don't intend to lower our standards." Foxbilt can't risk its investment with poor hog raisers—it has well over $1 million in this deal.

"We have about $74 invested in each gilt we place and $123 or more in each boar," says Fox.

Most farmers keep gilts for two litters, then dry up their sows and turn them back to the company.

"They can keep them longer, but after two litters they have meat-type gilts of their own," points out Dr. William Hugh, director of the swine lease program.

"Many of our first customers are now leasing only our boars to use on their own gilts, saved from the first crosses of our inbreds."

Foxbilt still charges only $3.75 a head for such boar rental, but where just this one animal is rented, the farmer pays 6% interest on the feed he buys. And he returns three market hogs (or 600 pounds of pork) for up to 30 sows, plus an additional 200 pounds for each 10 extra sows.

The lease program has grown at an amazing clip. Started in

1955 as a test with 400 gilts, it had grown to 3,000 head a year later and now is well over 6,000. Foxbilt officials expect to have between 8,500 and 9,000 on lease a year from now and 10,000 by May of 1959.

Foxbilt retains ownership of the pig crop (in the case of a gilt-boar rental) until the pigs reach market weight. This prevents a farmer's other creditors from taking the pigs. By then Foxbilt has selected the gilts it will take back and has collected the feed bill. Then ownership of the pigs passes to the farmer.

There's no marketing tie-in of any kind so far. A farmer can sell to whomever he wants. Foxbilt points out that its plan leaves much more control and decision-making with the farmer than most contract plans do.

Some packing companies have shown an interest in working out a marketing "deal" because of the general quality of the hogs. Farmers report they have been getting a 50c to $1 a hundred premium.

Any farmer leasing stock from Foxbilt must agree to follow sound management practices. A company representative checks the farm regularly and sends in written reports. Local veterinarians carry out a recommended health program.

Farmers are "strongly encouraged" to keep accurate records. Many admit that for the first time they really know what their costs are.

*"We have tried to design our plan to attract farmers who are already raising hogs—not to lure new producers into the business,"* sums up Fox. A lot of good hog farmers seem to be attracted."

*For more information on this leasing program, write to Foxbilt, Inc., Fifth and Grand, Des Moines 7, Iowa.*

## Forage Acres Must Fight Surpluses

American farmers need to put more land into hay and pastures and raise less food crops and feed grains if they are to solve the surplus problem, says a University of Minnesota agronomist.

W. M. Myers believes that diverting more acres to grass would mean more beef production, since forages can't be used to any great extent for pork, or as food crops. This, he said, would result in less total food from each acre eventually reaching the supermarket.

Such diversion "would be a powerful tool in bringing production and consumption back into balance," Myers stated. "Government agricultural programs could be designed that would accomplish this objective. *—University of Minnesota*

# The New Poultry Inspection Law

**On January 1, 1959, inspection for wholesomeness will be required for all poultry and poultry meat moving in interstate commerce . . .**

Condensed from Agricultural Marketing

*Herman I. Miller,* Agricultural Marketing Service

WHAT will be the effect on the poultry industry of the law which makes inspection compulsory?

Those in the industry and USDA poultry specialists feel that the "Poultry Products Inspection Act" will be beneficial to the poultry business, just as the "Meat Inspection Act," put into effect 50 years ago, has been to the meat industry.

The inspection act, made law in August becomes fully effective on January 1, 1959, when inspection for wholesomeness will be required for all poultry meat moving in interstate or foreign commerce, or in designated major consuming areas.

At present it is estimated that about half the poultry in interstate commerce is being inspected under the voluntary inspection program of the Agricultural Marketing Service, the USDA agency which will also administer the new law.

Officials of the Poultry Division of AMS say that the regulations under which compulsory inspection will be conducted will undoubtedly be substantially the same as those now in use for the voluntary program. Of course, there will of necessity be certain changes—the processor, for instance, will not be required to pay a fee for compulsory inspection since these costs will be borne by the Federal government. The new regulations will be available to the industry soon.

Processors who are eligible may apply for inspection under the new law in 1958. Upon receiving the service, they are then subject to all of the provisions of the new law.

While, in general, poultry moving in interstate commerce must, after January 1, 1959, be inspected and carry the official inspection mark, there are some exceptions. The law does not regulate movement of live poultry and does not apply to a processor who

Reprinted from Agricultural Marketing, U. S. D. A., Washington 25, D. C.

markets only within his own State, unless he operates or markets in a designated major consuming area.

Farmers who process only poultry raised on their own farms and sell it directly and only to household consumers, restaurants, hotels, or boarding houses for serving in their own dining rooms are exempt, even if these sales are across State lines. Exempt to some extent, too, are processors and handlers of poultry and poultry products prepared as required by recognized religious dietary laws.

**A modern bomber when fully loaded carries enough gas to drive an auto 400,000 miles — or 16 times around the world.**

A retail dealer whose only processing operation consists of cutting up poultry carcasses in his own store for sale there is not considered as subject to the law, though a chain grocery which conducts the same operation for distribution in interstate commerce to a number of its stores would, on the contrary, not be considered exempt.

Those who process or market poultry in designated major consuming areas, unless otherwise exempt, will be considered as interstate dealers.

Under the terms of the law, these areas — major population centers—will be designated by the Secretary of Agriculture following application by local or State officials or groups and subsequent public hearings.

**Virtue consists, not in abstaining from vice, but in not desiring it.—G. B. Shaw.**

If, after considering the information brought out in such a hearing, the Secretary then decides that poultry and poultry parts are handled or consumed in the area in such volume as to have an effect on the movement of inspected poultry in interstate commerce, he may "designate" the area and prescribe that the law become applicable to poultry moving or handled in that area.

Notice of his decision is then published in the Federal Register and becomes effective six months later.

For poultry moving in interstate commerce or in these designated areas, the law provides specifically that:

1. Qualified inspectors make bird-by-bird examinations of the poultry carcasses at processing plants.

2. Inspection of poultry before it is slaughtered be con-

ducted at processing plants to the extent that the Secretary deems necessary.

3. Poultry or poultry parts found to be unwholesome or adulterated be condemned for human food purposes and destroyed.

4. Poultry slaughtering and processing plants be constructed, equipped, and operated in accordance with good sanitary practices. These requirements will be spelled out in the regulations.

5. Shipping containers of any poultry meat inspected bear the official inspection mark and the approved official plant number. Each individual container must also carry the name and address of the processor or distributor, the name of the product, the net weight, and in some cases a statement of ingredients including any artificial flavors, colors, or preservatives used. These labels must be approved by the USDA.

6. Processors and handlers keep records of their transactions and hold them for a period of two years.

It is expected that the law, intended primarily as a consumer protection measure, will have a beneficial effect for the entire poultry industry.

The assurance of wholesomeness which the consumer receives should help increase his desire for poultry meat and may result in an increase in per capita consumption of poultry. These factors may also help to open up new markets for export.

The law will also benefit processors by tending to equalize competition and help to bring about a more uniform price structure.

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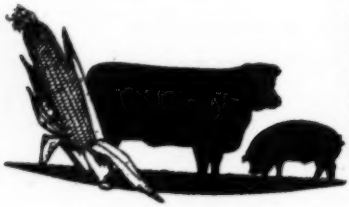
## Report Labor Savings in Corn Production

A farmer today produces more than four times as much corn for every hour he spends on the job as his grandfather produced in 1910. Cost studies by an University of Illinois agricultural economist show that today a central Illinois farmer produces 75 bushels of corn an acre with 6 man hours and 5.4 tractor hours.

Back in 1910, a farmer averaged only 50 bushels an acre, and it took him 18 man hours and 46 horse hours to get the job done.

*—Farm News*

# Lasater Breeds for Beef—Not for Looks



**His breeding philosophy leaves conventional cattle breeders incredulous: "In my book, good conformation means that carcass which yields a maximum of top quality human food per pound of body weight . . .**

Condensed from The Country Guide

*Cliff Faulknor*

TOUCH a lighted match to a wad of guncotton and you'll have some idea of how Colorado cattleman, Tom Lasater, affects conventional cattlebreeders. Every time he expounds his offbeat theories of cattle breeding, they go into a fast burn. Some are left in a state of semi-shock.

When Tom got fed up with the kind of cattle he was producing he developed a breed of his own, the Beefmaster—a big, long-bodied critter, full of choice cuts, that can wean a 600-pound calf every year under long range conditions. (His record is a 906-pound bull calf at weaning.) Beefmasters will never shine at a bovine beauty contest, but they do make cattle buyers see happy dollar signs in front of their eyes. They are the result of a treat-'em rough-and-cull-'em-hard system, which knocks many of our present notions of breeding cattle into a cocked hat.

One longtime purebred man, listening incredulously to Lasater tell how he developed his Beefmasters, finally broke in with the question: "What color are these cattle of yours?"

"Color?" said Tom mildly, "any color and all colors."

"Any color!" the man exploded. "Man, we've been breeding our present color combination over 40 years!"

"What makes you thing a certain color—or shape of head, for that matter—will give you more or better beef?" Tom shot back.

In fact, that's the core of the Lasater philosophy — direct selection for the particular feature desired. If you want a full, well-flushed hindquarter, select for just that—not for a certain type of head or eyebrow that you *hope* will give your animals a well-fleshed hindquarter. And when you cull, be completely ruthless about it. A cattle breeder can't

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afford to keep herd "pets."

"Take homing pigeons, for instance," Tom went on. "I don't know anything about homing pigeons, but if I were going to breed them, I'd send a cage of birds to Korea and have them released. Then I'd send a cageful to South Africa and have them released there. The ones that got home within a predetermined time, I'd call *homing* pigeons, and I'd breed them. Any that came in after that date would be pigeon pie. I sure wouldn't waste my time selecting for a certain wing spread, or shape of bill.

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**She asked him to accompany her on a shopping trip. He agreed. So she took him to the milliner's; she took him to the jeweler's; and, eventually, she took him to the cleaners.**

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"And the only knowledge I'd need would be how to make out an express tag," he added.

For Tom Lasater believes livestock breeding is the simplest pursuit in the world, and that the only hard part is to keep it simple. Let nature do her work, and the scales or scientific tests give the answers, is his motto. (All too often, a breeding expert is just somebody else with a high-priced animal he wants to sell.)

To keep the business simple, Tom suggests you make a list of the exact characteristics you need in your animals under your particular environment and marketing setup. Then, you should spend the rest of your life trying to reduce that list—the shorter this "must" list the better—because unnecessary factors (such as color) only slow up your breeding program.

His ideal list would have only one item on it. The race horse breeder should be able to achieve this because the only characteristic he should have to consider is speed on the track. All the man has to do is select the fastest horses and let nature decide what is the proper length of leg. The breeder should be something like a pacer in a race.

"I wouldn't worry about the horse's color, or shape," he stated, "just so long as it looks enough like a horse for the judges to let it on the track."

For his beef cattle, Lasater has boiled his list down to six essentials. These are: (1) disposition, (2) fertility, (3) weight, (4) conformation (Lasater style), (5) hardiness, and (6) milk production—in that order of importance. To have any breeding value, an animal must possess all six of these essentials, because each one is like the keystone of an arch, dependent on the other. When one of the six is noticeably

deficient, that animal is culled.

"You might be surprised because I rate docility so high on the list," said Tom "but I look on an ill-tempered animal as an unthrifty one, and I don't keep unthrifty stock. Quiet, relaxed cattle gain much faster than those that are tense and skittish—and they are cheaper to handle, too."

Lasater cows are required to drop, raise, and wean a calf every year of their lives or get out, so the fertility factor is taken care of on the dam's side by culling. This makes recording an easy matter. Every cow carries an age brand — she must have produced a calf every year or she wouldn't be there. And she mustn't take all season to do it, either. On July 1, bulls are turned in with the cows and heifers for 63 days (three heat periods). Any females not settled then are culled. Calves begin to arrive about April 10 next, and any cow which drops her calf after May 22 is also culled. This eliminates shy breeders, and ensures a uniform calf crop.

"We occasionally lose a good one that way," Tom admits, "but we do get rid of all the lemons. That's why a breeder with high-priced stock is licked before he starts. He just can't bring himself to knock a $10,000 or $20,000 lemon on the head. One thing about following our breeding philosophy is that there's no danger of becoming involved with high prices. The public won't pay exorbitant prices for livestock bred along utilitarian lines."

Lasater has no way of knowing whether he has any infertile bulls or not, and he couldn't care less. All an infertile bull costs is his keep, and the fertile ones perpetuate their fertility in their calves. That's what he means by letting nature make the decisions.

**Keep accurate and complete farm records; they are one of the keys to successful farming.**

As far as weight is concerned, bull calves are weighed at least once a year as they go into service, and poor gainers are eliminated. Heifer calves are weighed in bunches at weaning and averages taken, while yearling heifers are weighed at the beginning and end of each grass season. Average weight records ensure that the herd is showing progress, and culling is controlled by the other five factors.

Judging Lasater cattle for conformation requires that you begin at the hindquarters and work forward as far as the shoulders. "We don't care if they have a head or not," said Tom. "The only thing they need a head for is to eat, drink, and emit a mating call."

Hardiness is bred into Beefmasters via the old law of survival of the fittest. It is defined at the Lasater ranch as "an animal's ability to maintain itself in a healthy, vigorous condition on the range without any assistance from man." Lasater cattle are vaccinated against blackleg and dehorned. (Tom doesn't complicate his program by trying to breed the horns out. Dehorning is both simple and cheap.) In winter they get a little hay and some alfalfa pellets, but in summer they have to rustle for themselves. Any individual which needs special treatment gets the axe.

**An antiseptic prevents growth of microorganisms; a disinfectant kills them.**

"If you have a remote range where conditions are tough, put your breeding stock on it," he maintained. "Put them through a trial by fire—you can't hurt them genetically that way. If you like to pamper livestock, pamper your commercial herd."

Lasater cows must be good milk producers so they can wean big, husky calves. Those that require milking at calving time have an automatic appointment with the meat packer. Good milk producers are those that provide all the milk their calf can handle.

"We don't know how much this should be, and neither does anyone else," Tom said, "and we don't decide what kind of udders our cows should have, either. We cull for milk production, and let God put the udders on 'em."

This is another example of leaving most of the scientific work of cattle breeding to nature—the most expert "expert" of them all.

Tom, who describes himself as "85 per cent Texas" has spent 40 years in the Lone Star state (his father was a cattle rancher before him), and seven years in Colorado. For several years he operated the old ranch at Falfurrias (located in south Texas) along with his present spread, which is astride Big Sandy Creek at Matheson, Colo. Lately, he sold the Texas ranch so he could concentrate his herd on the cooler ranges of the Colorado foothills. At the present time he runs about 400 breeding cows.

"We're not oilwell cowboys (in Lasaterese, anyone in the cattle business is a cowboy), he pointed out, "we're just plain cowboys. When we get a bit more rain we'll build the herd up to 500."

Genetically, the bulky Beefmaster is about one-half Brahman, one-quarter Hereford, and one-quarter Shorthorn. Although they're a recognized breed, they have no herd book or registry as-

sociation. Because the animals are range bred, Tom can't identify the sire of any of them, and that's the way he wants it. Before buying, too many cattlemen pin all their faith on the sire and dam of a bull calf when they should be considering the calf itself, he believes.

The name Beefmaster, however, is copyrighted. Anyone who wants to raise the breed is invited to sign a contract which states they are entitled to use the name, providing it is fixed with the name of the breeder. Jones Beefmasters, or Smith Beefmasters—like Lasater Beefmasters—are expected to reflect the practices of the breeder himself.

Asked whether Beefmasters are his idea of the ultimate beef animal, Tom Lasater shook his head. "We aren't married to Beefmasters, we're married to *results*" he said. "If we can get better results (more pounds of beef per unit of feed) from some other breed, we'd wash out our Beefmaster herd tomorrow."

If the Lasater breeding system could be described in one sentence, it would be "performance testing carried to the nth degree."

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## Cow's Age Revealed by Her Teeth

You can determine a cow's age by the changing pattern of her teeth. E. E. Ormiston, of the University of Illinois, says that if you can recognize the size and shape of the cow's incisors you can tell her age.

When a heifer approaches the age of two years, the central pair of temporary incisors or calf teeth are replaced by two permanent pincers. These new teeth are more than twice as big as the calf teeth.

The second pair of permanent teeth appear at two and one-half years of age, and they are fully developed at three years. Another pair of permanent teeth cut through at the age of three and one-half and are developed at four years. At this time only two calf teeth, one on each side, are left. All eight incisors are completely grown in the maturing cow's mouth at the age of five. Also at this age the cow's two permanent pincers begin to level off.

In each succeeding year the teeth lose their rounded shape and show rather typical patterns of wear. However, after five or six years, it becomes harder to determine a cow's age by her teeth, because variations in feeds and grazing conditions affect the normal wear of the teeth. —*Sam Russenberg, University of Illinois*

# To Make That Bright Idea Pay Off

**Guide to the farmer inventor: Expect little, build a prototype and do not try to overmilk your brain wave . . .**

Condensed from
Practical Power Farming (England)

*David P. Ransome*

MUCH can be said for the farmer-inventor — and much has been said against him. It is probably no exaggeration to say that the bulk of agricultural machinery on the market today was conceived in the first instance by farmers. A study of the history of agricultural machinery discloses that practically every major contribution to its development was the brainwave of a man who tilled the soil, or at least was very close to mother earth.

If this is so, why is it then that the modern farmer-inventor has such great difficulty in persuading a manufacturer to take up an idea, a patent or even a working prototype for further development?

Businessmen are not usually slow on the uptake, nor slow to appreciate a good thing, but the impression among many farmers, derived from their own experience, must be to the contrary.

Many an enthusiast has spent large sums of money, not to mention hours and hours of valuable time, in developing an idea which he conceives to be of great importance, only to rue the day the idea was born.

It is the purpose of this article to try and shed some light upon this problem. It may also help some who are toying with, or even working on, ideas which they fondly believe will revolutionize the particular parts of farming with which they are concerned—especially if they anticipate making their fortunes from royalties on the sales which manufacturers are going to fall over themselves to have the privilege of making.

## Cold Light of Day

If any farmers have any such dreams they would be well advised to allow them to evaporate into the misty darkness from whence they came and allow the all-penetrating sunshine of day to

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Dorset House, Stamford Street, London S. E. 1, England

enter into their thoughts.

Expect little and possibly obtain much, is much better than expecting much and receiving little.

One frequent basic cause of disappointment is that an inventor of a machine looks at his particular problem, and his cure for it, as being universal.

**The International Cotton Advisory Committee reports world production of cotton down significantly. It expects total stocks in the U.S. to fall to around 8½ million bales; still above normal, but 6 million bales less than two years ago. In the higher grades there is no longer any surplus.**

Of course it is not so. Farming practice, climatic conditions even quality of crops and methods of live stock husbandry all vary far too much for this to be so.

Any new product a national manufacturer puts into production must have a sufficient demand over the whole country, and even possibly for export, to warrant the capital which he is going to have to sink into it.

Many a farmer-inventor gives no thought to these matters and carries out no elementary market research beyond his own farm or immediate neighborhood.

Before approaching a national manufacturer the inventor should, therefore, have satisfied himself, or sought the advice of a consultant or other experienced person, as to the likelihood of his invention finding a national market.

If an invention has only a local market, then it is only suitable for local manufacture. If the farmer-inventors would appreciate this point many would avoid a great deal of expense and disillusionment.

There are many cases of inventions, appearing on the face of them to be suitable for national production which never find a manufacturer, or if they do, the terms which eventually have to be accepted seem to be miserly.

During the course of my life I have had many come to me with patents, drawings, or in a few cases first prototypes—usually of a very rough and ready nature—and with an enthusiasm for what is being offered which would make that of an ardent football fan seem to pale into insignificance.

This type happily overlooks all the possible snags both technical and commercial—there just are not any. And he cannot understand why one thinks that every farmer in the world will not want to buy his machine. He has so convinced himself of the sound-

ness and potential of his invention that he demands, with a take it or leave it attitude $15,000 to $25,000 down plus a 10 per cent royalty.

When one politely starts to explain the difficulty there is in sharing his enthusiasm, one gets a look which seems to say "What an incompetent!"

**Hard School**

It will only be through the hard school of experience after he has done the round of all the bigger manufacturers, that he eventually realizes the truth of what he has been told at his first port of call.

But all the farmer-inventors are not of this ilk. A good proportion are reasonable people who have genuinely spent a great deal of their spare time and their spare cash in evolving a machine which does merit serious consideration by a manufacturer.

Their problem is finding a suitable manufacturer. They have no illusions about being the unrecognized saviour of the world from starvation, but merely think that they have devised something that is a good thing and that possibly has some potential for commercial exploitation. It is to these that I would mainly direct my remarks.

Anyone who has had any experience of developing agricultural machinery knows that one can never be sure that a new idea will work until it has been proved in the field. Further, it is well known that a machine may prove to be a good one after extended local testing but when taken out into wider fields defects develop which in some cases can never be overcome because the basic principle of the machine will not allow it.

**Tranquilizers are being used experimentally on some cows in the Colorado State University dairy herd. The "happiness drugs" quiet nervous or unruly milking cows. An injection takes effect in 20 to 30 minutes, and a dose lasts for about 24 hours. Because the experiments are in the early stages, no recommendations are made yet.**

That is why practically every manufacturer is wary of making a firm decision on the basis of patents or drawings.

As a corollary it follows that any inventor will have an easier task, and stands a better chance of securing good terms, if he is able to demonstrate a model or prototype and prove his claims to be true in fact as well as in theory.

Therefore I say, if you can possibly produce a prototype, at least sufficient to prove your principle, it is wise to do so.

### It Costs Money

Unfortunately it is not everyone who can spare the capital necessary for the designing and building of a prototype, plus the subsequent cost of trials and modifications. And it would be unfortunate, not only for the inventor but also for the agricultural machinery industry, if genuinely good ideas remained on the farms which gave birth to them, there to die for lack of the wherewithall to do the prototype work.

This is where a reasonable attitude of mind will often enlist the co-operation of a manufacturer. A manufacturer, understandably is not often inclined to sign up a long-term agreement for the manufacturing rights of an unproved patent.

He will, however, more readily agree to co-operate with the inventor to prove whether or not there is anything in the invention of practical value, and often agree to purchase an option for a modest sum on the manufacturing rights if the claims made for the invention are substantiated.

This can be a fair method of working for both the manufacturer and the inventor and relieves the impecunious farmer of the cost of the initial development work.

In some cases a manufacturer is prepared to take risks, provided that the inventor is prepared to share them with him.

This is done by the inventor taking the whole of his reward in the form of royalties on whatever sales are ultimately made. If the machine is not a success then there will be no royalties. If it is a success then the manufacturer will be only too anxious to sell as many as possible and the inventor will reap his harvest. On these terms a long-term agreement can often be entered into right from the start.

### Fatal Step

My experience is that any inventor who tries to over-milk his cow causes its death, and far too many farmer-inventors try to do this. Few laymen really appreciate the expense a manufacturer is put to in developing, producing and marketing a new product before he ever sees a penny back, and which, if things do not turn out right, he may never see back.

There is, in fact a tremendous amount of goodwill on the manufacturers' side toward the farmer-inventor, because they know that the majority of good ideas emanate from farmers. But the manufacturer does expect to be given credit for knowing his own business in regard to designing for production, cost of production, marketable value and sales potential, and this should be accepted by the inventor.

# What Is Integration In Farming?

**Contract farming has advantages for the broiler grower. It may work on hogs in the south, but it won't sweep the country . . .**

Condensed from The Indiana Farmer's Guide

*Fred Myers*

ONE OF THE most perplexing issues to confront the American farmer in the past few years is the accelerated trend to integration of farming operations, or what is sometimes called "contract farming." Much has been written and talked about integration (or vertical integration), but the average farmer is still wondering what it's all about.

Many farmers have already drawn the conclusion or have been led to believe that integration is an unwelcome invader and may destroy one of the basic concepts upon which the American farmer has traditionally operated—independence from outside control, freedom of choice in type of farm enterprise he wants to operate.

Lack of information and misunderstanding has resulted in open opposition from some farmers. They fear it will de-elevate them to the level of sharecroppers whose actions will be controlled by big business.

Integration is not new. American businesses have been using the integration concept for many years. For example, automobile manufacturers found that it was more profitable for several small companies to furnish them with items such as windshield wipers, radios and glass than to undertake the manufacture themselves.

In other words, the big companies contracted with several small industries to supply them with goods to be used on their automobiles. This enabled smaller industries to prosper and to share the large profits enjoyed by the automobile industry. It is true, of course, that these small industries didn't enjoy the independence of selling their goods to whomever they pleased. But they knew that with good management they could deliver the goods demanded by larger industry and could stay in business and make a fair profit.

Contract business has been partly responsible for giving the

Reprinted by permission from Indiana Farmer's Guide, Huntington, Indiana

American consumer the things that he wants at a lower price.

To further point out the idea of contracts, suppose you want to build a house. You can have one company erect the house and install all of the equipment such as heating, plumbing, and electric facilities. But ask anyone in the home building business, and they will tell you that it will generally cost you less if you or the company that erects the house contracts to have separate companies install the plumbing, heating, and electrical facilities.

**Buy certified seed. That's the only way to be sure seed is high-quality, true to variety and will grow.**

### Tomato Contract Example

Now let's consider the contract type of business on the farm scene. Contract farming is really not new in agriculture. In Indiana, most tomato growers sign a contract with a tomato packing company. This contract says that the grower must provide the packing company with tomatoes at the end of the season. It may also provide that the grower must maintain his crop in a way specified by the company.

This not only insures the company of having enough tomatoes for canning purposes, but it insures the grower of an outlet for his crop at perhaps a certain price. It does also mean that the grower can't sell his crop on the open market even if the market price is above the price guaranteed by the packer.

Sugar cane growers in Louisiana have had similar agreements with large sugar refining companies for several years because of the uncertainty of the market price for cane as a result of variation in import and export of sugar. Many vegetable growers and producers of other specialized crops have used contract farming for a long time.

The operation that has made the American farmer integration or contract conscious is the recent development and concentration of the broiler industry. The bulk of this industry, which formerly covered practically all the states east of the Mississippi River, has now shifted to certain Eastern seaboard states, namely, the Delaware-Maryland-Virginia peninsula, and Georgia and Arkansas.

### How Broiler Deal Works

Since the broiler industry is the principal subject in the integration question, it might be well to see just how it works.

As you may know, the margin is smaller between income and expenses in raising broilers than it is with such products as corn and hogs. This makes it neces-

sary for the broiler producer to have a larger reserve of operating capital. If he doesn't, and the price of broilers suddenly drops when he sells, he may find himself out of business.

To make the situation more dangerous, the producer can't hold the broilers until the price moves upward like the hog or cattle producer. Therefore, you can see that the risk of the broiler producer is much greater.

What, then, has been done in the broiler industry to spread this risk over several growers instead of just one? In some cases, a feed dealer will become an integrator or contractor. He helps to finance the grower.

Let's suppose that a grower did not hit the market just right and, as a result, lost a considerable amount of money. He would go to the feed dealer and ask him if he would finance the next broiler flock.

If the dealer decides to do so he, the dealer, agrees to supply necessary feed and other supplies to maintain the flock. But he specifies that the broilers must maintain a certain level of feed conversion and mortality rate. He may even make the decision as to what kind of broilers will be grown.

The grower and dealer also agree that all profit above a certain selling price will be divided between them or that the dealer will get a flat rate of perhaps five cents on each broiler sold. If the dealer has several or even dozens of growers under this kind of contract, the risk is spread over a number of growers instead of just one.

**Lamb feeding this winter is at the lowest level since 1951. The number on feed January 1 was 8 per cent smaller than a year earlier.**

You can see that besides making money for the dealer, the grower knows that if he manages his flocks correctly his chances of making money and staying in business are greater over a long period of time. He also knows that if the market falls when he must market his broilers, there is someone to help him out of the squeeze and off to another good start.

The dealer has his ups and downs too, but by carrying a large number of growers on contract, he can be pretty sure that he will have enough capital to help those who need help.

The grower, on the other hand, must sacrifice some of his independence because someone also is telling him what to do and how he must do it. But he also knows that his financial situation won't be desperate if he

fails to hit a high market. In addition, many growers are advised on management matters by dealer-hired specialists.

**In 1910 farm population was 34.9 per cent of total population. In 1957 it was down to 12 per cent.**

### Many Variations Used

Of course, there are many variations in the integrated broiler business, but generally, the pattern outlined above gives you an idea of how the scheme works. Additional facts concerning the broiler industry follow:

1. Contracts are not limited to those between the producer and dealer. They may also involve the processor and hatcheryman who contracts with the feedman, or dealer.

2. At the present time, an estimated 90 per cent of the broiler industry is integrated.

3. A producer doesn't necessarily have to integrate to survive. If he knows his management is good and that he has enough reserve capital to survive the losses he may have at market time as a result of low market prices, he can remain independent. In fact, low prices in 1954 and 1956 greatly stimulated integration in the broiler industry.

4. The producer-dealer contract usually covers only one broiler flock. After the flock is marketed, the p r o d u c e r can switch to another dealer, stay with the old dealer, or go back to being independent.

5. Integration can take place only where there are large firms involved. Small firms simply do not have the financial resources to take the risk of being an integrator.

6. The integrator has as much or more risk as the producer. Much of this risk is determined by the integrator's selection of producers. The integrator must select those producers that he knows are good managers and are fully capable of growing broilers with both quality and quantity. This, of course, lessens his risk considerably.

### What About Other Commodities?

Many people have fears that this type of farming is invading the country by storm and, therefore, they should rise up to fight it. This is not so. There are certain conditions that must be present before contract farming can become reality in connection with any commodity in any area.

First, integration m u s t be wanted not only by the producer but by the industry. If industry is already operating under a satisfactory arrangement—such as a business owning several farms or a large efficient farmer controlling management and contracting

in advance for both buying and selling operations — integration probably won't occur.

Second, the producer must be willing to give up part of the income from his products. For instance, let's compare a swine producer in Mississippi. The producer in Indiana undoubtedly knows more about management and is better adapted for swine production as a result of being in the Corn Belt, where feed supplies are often grown on the same farm, than the producer in Mississippi. The latter is just beginning to find out what the word management means and can't produce near the amount of corn he needs for feed.

Many southern farmers who have tried to raise hogs found that through their own ignorance or mismanagement they couldn't make it a paying proposition.

This condition helps integration. The farmer really has nothing to lose and everything to gain. He is satisfied with a small profit and is eager to learn. Comparatively speaking, the midwestern hog producer has, through the years, obtained better prices for his hogs than the Southerner. He has learned the principles of good management.

In addition, integration doesn't necessarily mean total integration. Any given farm product may be integrated in one locality but not in another. Such positive factors as mentioned above must be present before integration can begin.

**Purdue University authorities say lambs should be born eight weeks before the pasture season. Then if they have a good home they will weigh 40 to 60 pounds when they go to pasture. If the pastures are good enough and ewes are heavy milkers the lambs can weigh 90 to 100 pounds and top the market before hot weather.**

Farmers should realize that integration does not deal with the farm or the farmer. It only affects one particular product or enterprise on the farm. Because of this, farmers may lose some independence in raising hogs but that wouldn't affect their beef operation. There are probably many broiler growers who have other enterprises not affected by integration but who are selling their broilers on an integrated basis.

Some Indiana farmers have voiced the opinion that integration will soon take over both egg and swine production. We have already discussed the swine aspect.

As far as eggs are concerned, just think of how often an egg producer markets his produce. It's usually once a week. This means that he has about 52 market times when he can either get favorable or unfavorable prices. His risk is spread over 52 individual sales.

Compare that with the broiler producer. He markets only three or four times a year. If he hits a low price period twice of those three or four times, he may be forced out of business.

Chances are we won't see such a rapid invasion of integration with some other farm products as we saw with broilers. No one can definitely pinpoint the good and bad aspects of integration. This is because what may be good for one area or product would be bad for another and vice versa. Only individual producers can decide what would be best for them.

There is no cause for alarm for fear that integration will sweep the country. It won't. For some products such as beef, hogs, and eggs, integration is being tried on an experimental basis. If it doesn't work out, you can be sure that it won't be continued. If it does, complete integration, which is highly improbable, won't come for a long time.

## New Milk Solids Testing Device

A portable testing kit for measuring the total solids content of small samples of milk has been developed by U. S. Department of Agriculture dairy scientists.

Milk quality used to be judged almost solely on the basis of its cream content. But this is not so today. Weight-conscious Americans include less and less butterfat in their diets. Nutrition experts and consumers have become increasingly interested in the nonfat content of milk as an important source of protein, lactose, casein, albumin, sugar and several minerals important in the human diet. Some of these are also in demand for industrial uses.

To meet today's market demands, dairy scientists have been aware of the need to breed strains of dairy animals that would produce milk of the greatest all-round food value with less emphasis on butterfat. Lack of a practical means of measuring the nonfat solids content of milk under field conditions — an equivalent of the well-known Babcock test for butterfat — has been a barrier to progress in this field. The new testing device meets this need and eliminates more intricate laboratory methods.

*—Texas A & M College*

# *New for You . . .* THE EDITORS

*New Plow*—Ford Motor Company's engineers at their Farm Machinery Research and Engineering Center, Birmingham, Michigan, have developed a semi-mounted plow which functions like a large fully mounted plow, but is supported at all times by a caster-type rear wheel. This trailing wheel responds automatically to all signals from the tractor's hydraulic "brain" through the single touch control used for mounted implements.

*Know How Much Fertilizer You Apply*—"Hook or crook" guessing of fertilizer applications with corn planters, grain drills and fertilizer spreaders will be over when a new simple calibrating device now being tested reaches market. One model will tell you how much fertilizer your drill planter or spreader is sowing without taking them out of the machine shed. Another model will allow you to very simply calculate fertilize sowing rates while driving your tractor and implement in the field.

It will be marketed as a retail item but it is also being designed to be used as an agricultural premium by manufacturers and merchandisers of agricultural products. For information, write Farmer's Digest, Fort Atkinson, Wisconsin.

*New Grinder and Chopper* — Lundell Mfg. Co., has developed a hammer mill type attachment for their Super 60 Offset Chopper. It quickly converts the "60" into a high capacity feed grinder. Since the unit is readily portable with PTO power, it seemingly will be as versatile for father outside the house as the electric food mixer is for mother in the kitchen.

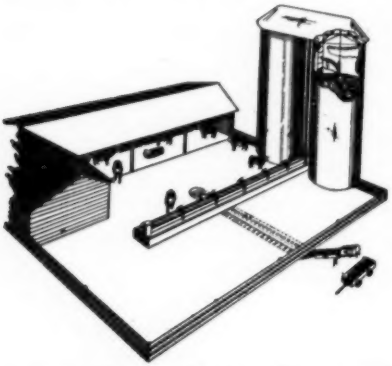
*New Reflective Paint* — Safety on the farm which should be foremost in every farmer's thoughts should be aided by the new reflective liquid developed by the Minnesota Mining and Mfg. Co., St. Paul 6, Minnesota. Called Reflecto-Lite, it can be brushed on trees, rocks, curbs, mail boxes, farm machinery, gates, or any object with a rough or porous surface. It remains unseen — not glowing — unless the viewer sees it from behind a light and then it is 50 times brighter than white paint. In daylight it looks like ordinary gray paint.

*New Furazolidone,* an antimicrobial Nitrofuran that is said to prevent more diseases than any other drug, will have more new uses if FDA extends clearance. Hess and Clark, Inc., Ashland,

Ohio, proposes the following new uses for their product.

1. Low level uses for improved egg production.
2. Use as a treatment for bacterial enteritis due to Necro and bloody dysentery in swine.
3. Use in preventing and treating paracolon infections in turkeys and chickens.

One new use has already been cleared by the F.D.A.



*Save Your Back* — Recent studies show that handling silage is still the most laborious job on the farm. The new Badger Bunk Feeder delivers the silage with no strain or pain. The auger does an excellent job of mixing silage and grain when fed together. It is built to weather and wear under all feeding conditions. As illustrated. Write Badger Northland, Inc., Kaukauna, Wisconsin for new catalog.

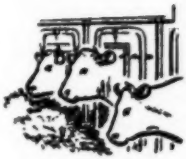
*New Feeding Tables* — Dairy farmers can feed as scientifically as any research farm with the help of the simple Beacon Grain Feeding Tables and Fresh Cow Feeding Guides. Printed on heavy duty durable paper, they are simple to use and give clear, concise, practical information.

There is no charge for these items in the Beacon Milling Company's distribution area that includes 13 northeastern states from the Virginias through Maine. A nominal fee of 25 cents is made for sending them outside this area. Write Beacon Milling Co. Inc., Cayuga, New York.

## Dust for Hornfly Control on Dairy Cows

The U.S.D.A. does *not* recommend use of methoxychlor *sprays* on dairy cows for control of hornflies or other insect pests. It recommends methoxychlor applied as a *dust* treatment only—for control of hornflies on dairy cattle. Its entomologists have found that this dust properly applied to only the backs of dairy cattle provides excellent control without any residue of the insecticide in the milk.

# Feed Dairy Cows Once a Day



**Wisconsin dairymen find they can save a valuable half hour each day by feeding silage only once . . .**

Condensed from Wisconsin Agriculturist

*Norb Bybee*

WHAT could you do with an extra half-hour a day?

If you had more time, would you do more repair work, spend more on your bookkeeping, planning—or just loaf. Some farmers have found that once-a-day feeding saves them a half hour and more.

Once-a-day feeding breaks down several ways. You can feed everything at once—silage, grain and hay—or just feed silage once a day as Jess Cotterill of Green Lake county, Wisconsin, does.

In April last year Cotterill found himself short handed. His son had just started farming on his own. Looking for a way to pick up time, Jess started feeding all his silage at 10 a.m. instead of the normal morning and night schedule.

Putting about 40 pounds of silage in the manger at one time for each of the 40 cows looked like quite a pile. He found himself sweeping overflowed silage back as before. Happily Cotterill adds, "There wasn't one pound difference in milk production, and the cows are quieter at milking time. They don't expect more silage. Now they hold still and aren't standing in the gutters."

**Know where you are every step of the way in farming—keep records.**

## Saves Half Hour

Cotterill figures he's saving one-half hour a day and he only has to pitch down silage once each day.

"Savings in time and labor plus maintaining milk production were found in experiments at Beltsville," outlines N. N. Allen, professor of dairy husbandry at the University of Wisconsin.

"Generally, silage and hay are fed once a day and grain twice," Allen adds. "Feed carts must have the capacity to carry the extra feed, then you circle the barn only once."

"Grain three times a day," argues Bill Schultz, Columbia

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county. His top cow gets 24 pounds of grain a day. A 3-year average of his 16-cow herd of Holsteins totals up to a bulging 530-pound record.

Schultz doesn't single out once-a-day feeding for this production record. But he does say it is one part of his herd management system.

**The auto industry uses lots of agricultural products each year—some 450,000 bales of cotton, 2,250,000 bushels of corn, 22 million pounds of wool, 560,000 cattle hides, and smaller amounts of various other farm products.**

Feeding heifers once a day worked so well that Schultz tried it on his cows. He has used this system for the last three years with excellent results. He has added 200 pounds to his herd average in less than six years.

Holsteins in his herd are turning in fat tests that would do credit to a Guernsey herd. They averaged 70 pounds of fat for the month of January. One 2-year-old heifer has swelled the average with about 5,900 pounds of milk and 289 pounds fat in 96 days.

How does Schultz start a cow on once-a-day feeding to maintain production?

"Break in a cow by feeding three or four times a day," he says. "Keep her on this silage and hay for a week or so until she's good and full, and then swing over to once a day." He feels it's important to know your cows, then you can feed for production.

Fresh cows get six parts oats to five parts corn in the ration. After they've milked a while the ration changes to five parts oats and six parts corn.

Following the morning milking the manger is swept down and one-half pound molasses is given each cow. Schultz sprinkles molasses with a garden sprinkling can. If hay quality is low, he uses up to 1 pound molasses. Cows will lick the manger clean.

The corn silage varies from 40 to 60 pounds, according to the cow. About 15 pounds of top quality hay are fed per cow. He feels that good hay cut at the right stage—he cuts three times a season—helps keep the cows in shape.

### Alfalfa Brome Best

"Vernal, brome and Ladino work best for the cows," points out Schultz. "In my case, hay of this quality is too rich for the young stock and seems to cause scours."

How does once-a-day feeding work over a longer period?

Back in the early 1930's Erwin Stuckert, Waukesha county, found he could pick up needed time for field work on this set-up.

Now 25 years later his son Glenn is taking over the farm operation. He maintains he'll keep on the once-a-day schedule.

"We're shipping 11,000 pounds of milk from 31 head of Holsteins. The test is running over 400 pounds for the herd," adds Stuckert.

The Stuckerts differ from the Schultz operation somewhat. They feed grain twice a day.

Stuckert sweeps down the manger after the morning milking and gives 8 to 10 pounds of grain per cow. After breakfast and barn chores, while the cows are getting exercise, 8 to 10 pounds of corn-and-cob meal per cow goes on top of the corn silage.

This is topped off with 1 to 2 pounds of soybean oil meal. Twelve bales of alfalfa-brome hay are split among the 31 head.

It's not necessary to stop back in the barn until late afternoon. Once-a-day feeding does save time—one trip up the silo, one trip up the mow. Handled right, production doesn't take a back seat either.

## Fertilizer Cheapest Feed

The cheapest feed a dairy or beef farmer can buy is fertilizer—applied to his grass. This has been demonstrated consistently in fertilizer trials made in 1956 and 1957 on farmers' fields in various parts of Pennsylvania.

Early spring applications of 100 pounds of nitrogen per acre at a cost of $12 doubled the dry matter yield of three commonly grown grasses. The yield of bluegrass increased from 0.8 to 1.7 tons per acre, orchardgrass from 1.1 to 2.2 tons per acre, and timothy from 1.4 to 2.8 tons per acre. The nitrogen-fertilized grass also was more valuable as feed because of the increased protein content.

"Nitrogen cannot do the job alone," declares Lawrence F. Marriott, soil technologist at Pennsylvania State University. He points to the need for a well-balanced fertilizer program.

"The importance of potash in fertilizer was shown by decreases of 18 per cent in yield of bluegrass and of 33 per cent in yield of orchardgrass when potash was not applied," Dr. Marriott states.

Omission of phosphate had less effect. The greatest reduction in yield attributed to a lack of phosphorus was 11 per cent for timothy. —*Pennsylvania State University*

# Are We Losing an Agricultural Race with the Russians?

**Russia now has half the number of college students, but 2½ times more agricultural trainees . . .**

Condensed from Better Crops with Plant Food

*E. T. York, Jr.*

ARE WE losing *another* race to the Russians, this time over a different but potentially more significant "Sputnik"—agricultural technology?

Recent reports indicate the Russians are in the process of launching a rocket of improved agricultural technology that could have a greater impact upon the struggle for world freedom than earth satellites and intercontinental missiles.

Two facts strongly indicate the trend this race has taken in the past decade:

(1) Russia is graduating 2½ times more agricultural students today than the United States, with only half the total number of college students. In 1954, over 10% of Russia's college graduates were in agriculture, while 2.2% of our students were agriculture specialists.

(2) The number of students graduating from Soviet agricultural colleges *increased almost* 80% in just six years—1948 to 1954—while the number of students graduating from U. S. agricultural colleges *declined more than* 80%.

If "Sputnik I" didn't dispel any doubts about the quality and effectiveness of Russian scientific training, here are a few facts that should:

● *Under a compulsory curriculum, all Russian students are introduced to biology in the fourth grade; geometry, algebra, and physics in the sixth grade;*

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*chemistry in the seventh and calculus in the tenth.*

●*Upon graduation from secondary school, the Russian student has completed five years of physics and four years of chemistry,* while most of our high schools require neither of these courses.

**About 10 to 12 per cent of the U. S. crop acreage is used for exports.**

● *The Russians require five years of mathematics, above the arithmetic level, and five years of biology,* while we usually require only one.

●*The Russian student advances to a higher level of mathematics in high school than most of our agricultural* college students *are required to know.*

It is well recognized that much of the progress that has been made in agricultural technology in this country has resulted from the application of the fundamentals of the physical and biological sciences. For example, the use of chemistry, physics, and microbiology in the development of sound principles of soil management and the use of mathematics, botany, and genetics in the development of hybrid corn —illustrate how we have applied our knowledge of the basic sciences to improve agriculture.

Recognizing these facts, the the Soviets are going all out in training their agricultural students in these fundamental sciences. With this type of training being offered the great mass of students now passing through Soviet agricultural colleges, there is little reason why the Russians should not be able to do well in any race for superiority in agricultural science.

The Russians are also using every available opportunity to take advantage of existing agricultural know-how from the United States and other sections of the world. Here are examples of their efforts:

● *They employ corps of language experts to translate reports of scientific work in agriculture from around the world. The United States has no such program — meaning significant foreign scientific developments may go unnoticed for years by us, but seldom by the Russians.*

●*Since World War II, the Russians have secured from us thousands of bushels of hybrid seed corn and high-yielding, disease-resistant wheat, eggs from superior strains of poultry, an entire herd of Santa Gertrudis cattle (the only breed which the United States can claim to have developed), as well as a wide variety of other improved plant and animal germ plasm.*

By taking advantage of many of our most significant advances in agricultural technology, they have the opportunity to progress at a much faster rate than we were able to in the past without the benefits of such advance work. They should catch up in a hurry unless we, at the same time, intensify our efforts.

Some would say "so what"—what difference does it make if the Russians are able to equal our achievements in agriculture? The answer to such a question is best provided by examining the contributions which recent developments in agricultural science have made here in the United States.

During President Washington's first term of office, approximately 90 per cent of our population was engaged in farming. Therefore, it took nine people on farms to feed themselves and one extra person. Today, only 12 per cent of our people are on farms so that each farm family produces enough to supply itself and seven others.

Thus, through continued improvements in our agricultural technology, we have been able to produce more per acre and reduce manpower requirements through mechanization. Consequently, millions who would have had to farm to survive are free to build automobiles, TV sets, new homes, highways, and other conveniences.

As long as so much of our energies were directed only toward producing food for subsistence, we had little opportunity to industrialize and make the many improvements that we take for granted today. Therefore, at the very foundation of the development of our high standard of living — the highest of any country on the earth—has been our increased capacity to produce needed agricultural commodities.

**Discovery of large, blight-free American chestnut trees in 36 states in 1957 raises hopes that this once-proud giant may again return to U. S. forests after being virtually wiped out since Asiatic blight first appeared about 50 years ago.**

Not only are we the best fed nation on earth, we are also the cheapest fed in terms of our earning capacity.

In the United States today, it takes an average return from about six minutes of labor to buy a loaf of bread; in Russia it takes 14 minutes; 32 minutes to buy a dozen eggs, in Russia 3 hours; 25 minutes for a pound of bacon, in Russia 5½ hours. In Russia, it takes 2 hours to buy a bar of soap or a package of cigarettes;

8 days to buy a pair of leather shoes; and 6 weeks to buy a suit of clothes.

The significance of our increased productive capacity in agriculture was strikingly demonstrated during and immediately after World War II. Had farmers in 1944 been compelled to go back to the machines and methods used 25 years previously, 4½ million more workers would have been required to produce the same amount of food.

**Fertilizer delivered in the winter for spring use should be stored on a dry floor and piled not more than eight bags high, say agronomists. They advise keeping livestock away from stored fertilizer.**

Obviously, the war effort would have been seriously impaired if that many more people had been required to produce essential agricultural products. Furthermore many of our top statesmen have indicated that the food which we made available to a starving world following the war was one of the greatest of all deterrents to the spread of Russian communism throughout the world at that time.

These contributions of agricultural science have been tremendous. We should be proud of them. But we shouldn't rest on them—not when we think what comparable developments could do for the Communists. Russia still has about 45 per cent of its population working in agriculture—comparable to our position about 75 years ago. But, remember, if the Russians could equal our current capacity to produce food and other needed agricultural products, they would have some 60-70 million farm people free to do other things. What this would mean to a Communist dictator! What manpower to build an even greater war machine! What multitudes to put to work in missile industries! What possibilities of economic development to use in strengthening the Communists' position, not only in the Iron Curtain countries but with the neutralist nations as well!

Obviously, we can do nothing about Russia's scientific progress. At present, we are well ahead in the development and application of agricultural science. Our only course of action is to *stay ahead, well ahead.*

Our first task is to make sure that we have sufficient numbers of well trained agricultural specialists. The opportunities for college graduates in agriculture are undoubtedly greater today than ever before. Agricultural colleges all over the country report an acute need for 2 to 3 times

the number of graduates they are now turning out.

The seriousness of the present shortage of well-trained agricultural specialists is reflected in a recent statement by Texas A & M Vice Chancellor in Charge of Agriculture, D. W. Williams: "Agriculture faces a drying up of trained leadership at its source. There just simply are not nearly enough young men entering agriculture . . . There is," he said, "a danger to the whole country if this downward trend in interest isn't checked. We will just wake up some day and there will be nobody to hire or to run the farms or to explore agricultural research."

Careful attention must be given to means by which this serious shortage of trained agricultural specialists can be overcome.

Furthermore, we should make a careful review of educational requirements—both in college and in preparatory schools, giving consideration to increasing requirements in mathematics and basic sciences.

Consideration should also be given to some more systematic and complete program by which we can keep abreast of latest foreign developments in agricultural technology. There is an especially great need for a system whereby foreign scientific literature — particularly Russian —can be translated and made available to our agricultural scientists.

**About 70% of Mexico's population are farmers, and occupy 10% of the land.**

We cannot lose this technological race—one that could be far more important than launching Sputniks. We must go all out to maintain our present superiority in agricultural science. We have no reasonable alternative, so long as freedom and food are important to men.

## Never Too Old To Drink Milk

You're not too old to drink milk. To see if you and your family are getting enough milk, check yourselves against these recommended daily amounts of fluid milk. Adults, 2 or more cups; children, 3 or 4 cups; teen-agers, 4 or more cups. Some of this can be consumed in cooked foods containing milk in some form (dry, evaporated, or fluid), or in dairy products made of milk, such as cheese or ice cream.

# Insect Warning!
# Corn Borer Carry Over Record High

**In Missouri 1957 crop damage was high with a low carry-over of borers from 1956. Now, the count is highest on record . . .**

Condensed from Missouri Ruralist

*Cordell Tindall*

IN planning for the new year ahead, consideration must be given to the control of insects. New and effective weapons are available now, but the battle against bugs on the farm is still a costly one. The cost of controlling insects adds to the cost of producing crops, but ravages of insects cannot be ignored!

As Missouri corn growers harvested their 1957 crop they learned to their dismay corn borer damage was much more severe than ever had been experienced in the state! When the European corn borer first edged into the state from the eastern part of the Corn Belt there was considerable alarm. But as the years went by and damage was slight it began to appear corn borer would not be a serious pest in Missouri.

There has been little or no attempt to control borers in most sections of the state. The weather seemed to be on the side of the corn grower.

Last winter (1956-1957) there was little cause for alarm in the "census" of borers wintering over in cornfields and in other likely spots. In fact, the winter count was the lowest since 1949.

Last summer as borers began to appear there was some concern but still growers were not prepared for the serious damage they found at harvest time.

Here is the disconcerting news: entomologists counting borers over the state this winter now report the count is by far the highest on record! Does this mean a still worse infestation next summer? Not necessarily, reports Stirling Kyd, Extension entomologist. Unfavorable weather next spring and summer could do much to control the crop of borers. Unfortunately, entomologists are not as sure as they once were just what unfavorable weather might be. Last year's weather did not appear to be especially favorable.

Reprinted by permission from Missouri Ruralist, Fayette, Missouri

If you were a grower suffering from corn borers last year, you may feel the urge to do something about this big crop of borers wintering on your farm.

**In 1850, farms produced 1/3 of the gross national production by value. In 1955, they produced only 1/17th.**

Chopping up old stalks will help some. This once was considered a quite valuable control measure. But enough borers can winter around the fence rows and on neighboring fields to invade your field next summer.

"There may be more migration of corn borers than we formerly thought," comments Mr. Kyd.

If cleanup measures were conducted on a community-wide basis they might be of value. But the realistic view is that such a program is unlikely.

So it now appears that a wait-and-see attitude is the only practical program, now.

What about next summer? Spraying with DDT, at the rate of 1½ pounds of actual DDT to the acre, has been the recommended treatment. More and more the use of granular DDT, at the rate of 20 pounds of 5 per cent granules, is gaining favor. Aerial treatment is quite effective.

In some areas treatment with granules from the air was used successfully last year.

This year toxaphene, also in the granular form, is being recommended, too. Rates are 15 to 20 pounds of 10 per cent granules to the acre.

When does it pay to use these chemical control measures? Mr. Kyd's rule of thumb is to use chemicals if 75 per cent of the corn plants show evidence of the first brood of corn borers.

The first brood of borers usually shows up in Missouri soon after the first of June, say about June 5 to 10.

Formerly, spraying was based on egg mass counts. But it's easier to watch the plants for signs of borers by leaf damage or feeding in the whorl.

After the first brood the entomologists are not so sure of themselves in recommending control.

Now as to the economics of corn borer control. With corn selling for a dollar or less a bushel, cost of controlling borers may look high. Average cost for materials is about $2.50 an acre.

### How Serious Are Borers?

How serious can borers be? Not only are ears lost by lodging, each borer in a plant of corn reduces the vigor of the plant and cuts yield.

This last year there was considerable lodging of corn in Mis-

souri. Hybrid varieties that normally do not go down lodged. All of this cannot be blamed on corn borers, the experts say. In fact, all of the reasons for so much lodging are not clear. Early wet weather followed by dry weather may have been a factor. Weather conditions affecting the release of fertility may be another reason.

There are other things to do about corn borers, too! One factor in damage is time of planting. In some states entomologists recommend planting dates. Not so in Missouri. Here's what they say: Plant with neighbors, don't plant real early or late!

If there is an invasion of borers and your field is the only one at the vulnerable stage, it will be damaged more than if other fields in the area are in the same stage.

### Here's Promising Outlook

Some promise of corn borer resistance is held out by corn breeders. It's obvious that some varieties do have a definite resistance to borers. The characteristics that make for good corn—stiff stalks, vigor and healthy roots—also add resistance to borer damage. But there definitely is a chemical substance in some varieties that borers do not like, some scientists report.

Just what would happen if everyone planted borer-resistant varieties does not seem clear right now.

In this discussion of the corn borer situation we do not mean to indicate that borers are likely to wipe out next year's corn crop. The problem may not be as serious as it was last summer. But it could be quite serious, indeed. We think you should know about the potential danger.

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**Molasses makes an economical feed for dairy cows when six and one-half gallons can be purchased for the value of one bushel of corn, say dairy specialists. If two or three pounds are fed each cow daily, dry roughages are made more palatable although their feed value is not increased.**

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### Prepare for Spraying

Last year much of the spraying that was done was done too late to be effective. This year we should be better prepared, both mentally and physically.

In addition to corn borers, the ever-present soil insects still are causing considerable damage to corn. Here again, cost of using soil insecticides causes many growers to decide to skip this practice.

Soil insecticides cost from 2 to $2.50 an acre. This means a little over 2 bushels of corn to the

acre. With stalk counts running from 12,000 to 14,000 to the acre, this means it doesn't take a very big improvement in stand to pay for the insecticide. You can see what an improvement in stand of 500 stalks will do.

And soil insecticides prevent damage, the most effective way of controlling insects. This is much better than to wait and try to contain insects.

Both aldrin and heptachlor are recommended as soil insecticides.

While rootworm of corn seems to get the most attention, other soil insects cause serious damage to stands, including seed corn maggots, seed corn beetles, cutworms and wireworms.

One method of applying soil insecticides has been to use fertilizer with insecticide included. Missouri entomologists favor broadcast spraying with the insecticide worked into the soil. With starter fertilizer, new applicators tend to put the fertilizer in bands further away from the seed. The insecticide needs to be next to the kernels to protect them.

Seed corn treatment is important in getting a good stand. A few years ago practically all hybrid seed was treated. Now, some companies are not using treatment because seed treated cannot be used for other purposes than planting. This is especially true of dieldrin. For treatment, one ounce of actual dieldrin to the bushel is recommended. Heptachlor also may be used.

Liquids should not be used for seed treatment.

Grain sorghum seed also should be treated, with 2 ounces of dieldrin to the 100 pounds.

As we grow more and more grain sorghums, will this crop be attacked by corn insects? Entomologists say the danger is not great, although some insects do attack sorghum, too.

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## Rations for Brood Sows

Three years of research at Purdue University has shown that corn silage can be fed with satisfactory results to brood sows during gestation.

Feeding of good quality corn silage, 1.5 pounds of a high quality protein supplement and minerals free choice resulted in a 20 per cent reduction in feed costs, an increase of 1.4 to 2.0 more pigs per sow at farrowing, and an increase of 0.3 to 1.3 more pigs per litter at weaning.

# Pointers on Selecting A Tractor

**It all depends on what you need . . . but do some figuring before you buy a diesel . . .**

Condensed from
American Agriculturist

*Melvin E. Long*

WHICH is the best tractor? That query is often received by persons connected with the tractor industry. Like many seemingly easy questions, it has no easy, direct answer.

If an agricultural engineer was to answer this question for you, he would first ask for many items of information, and then give an answer. However, this answer would not necessarily apply to another farmer, or to another situation.

Here's how an engineer would go about selecting a tractor. If you mentally supply the answers or information in each part, you may have a better idea of the "best" tractor for your needs.

First of all, get a Nebraska Tractor Test Bulletin, from the University of Nebraska, Lincoln, Nebraska. The information in it is accurate, honest, and unbiased. It represents the facts as they exist, and plays no favorites.

The large test results sheet may at first seem a bewildering array of figures. But a careful study of the directions and explanations will enable you to interpret the information applicable to your situation. This is far better than taking the word of a tractor salesman that his tractor is "best" by Nebraska Test.

There are three fundamental decisions to make in selection of a new tractor. They are type, size, and make. It is probably wise to make the various decisions in that order.

## Type

The choice between a row-crop (or tricycle) and a general purpose (or four-wheel) tractor is generally dictated by the type of crops that you're growing. If you have no row crops, you'll probably select the general purpose type tractor, for its greater stability and better steering qualities in soft or loose ground.

If you need a tractor for row

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crop cultivation, several manufacturers supply high clearance four wheel tractors, as well as interchangeable front end assemblies to convert the tricycle type to four-wheel operation where the wide front end is desirable.

**Egg vending machines are seen now at roadside markets, service stations, and at factory exits. The refrigerated, coin-operated dispensers cost about $1,700 but their farmer-owners collect an extra 20-cents-a-dozen by vending eggs direct to users.**

If you feel that the general purpose type tractor meets your needs, then you can choose between wheel types and track types. If you have a large enough operation to keep one tractor busy without using it for row crop cultivation, you may wish to consider the track type.

Several manufacturers of farm tractors have track type models available. Although their first cost is somewhat higher, the increased flotation and traction in soft ground conditions often enable you to get into a field well ahead of wheel tractors. Their ability to do earth moving work during the off season, either on your farm, or on a custom basis, is also worth considering.

### Size

Since the end of World War II, all farm tractor manufacturers have increased the horsepower of their tractors. Many of the so-called small tractors that were one row cultivation and one plow tractors are now in the 2-3 plow class, and will handle a four row corn cultivator. So, when considering a new tractor, think in terms of the capacity of the present model, rather than the capacity of its ten year old counterpart.

The inclination to "keep up with the Jonses" in tractor size can result in the purchase of a much larger tractor than is really needed. Here is one of the many places where the Nebraska Test information can serve as a reliable guide.

Other factors to be considered in size selection are present size of farm and future plans for expansion during the expected life of the tractor; and present tractors on hand that will be used along with the new unit.

### Make

Many farmers tend to consider price as the most important item in the selection of which make to purchase. Actually, the original purchase price is only one of the many factors to consider, and in the final analysis is probably one of the less important considerations.

The cost of tractor power is made up of operating expenses, such as fuel and lubricant; fixed

overhead, such as taxes, insurance, interest on investment, and depreciation; and repairs. These costs must be charged against the hours of use that the tractor furnishes. This in turn depends upon the hours of use given the tractor each year, and the expected life of the tractor. Here, again, the Nebraska results will give you the best information on the all important item of fuel consumption.

What about the type of fuel—gasoline, diesel, or LP gas? Gasoline is the most popular fuel, and probably with good reason. LP gas offers some advantages over gasoline, but except in regions where the gas is plentiful, and therefore cheap, it cannot compete cost-wise with gasoline.

It is difficult to justify economically a diesel engine in any tractor smaller than the 4-5 plow class, and then only if you have at least 1000 hours per year use for it. Here are the reasons: The increased first cost of a diesel over a gasoline tractor can only be recovered by the savings in fuel cost.

A diesel of the 4-5 plow size can, by its inherent characteristics, be designed to use less fuel than a comparable gasoline engine. But it will take at least 1000 hours per year of use to save enough during the life of the tractor to make up for the extra first cost, taxes, interest, insurance, etc. In the smaller size tractors a diesel engine burns almost as much fuel per horsepower hour as a gasoline engine. Therefore, the only saving is in the cost of fuel.

**Turkey production may increase in 1958 to a new record high. A national increase of 1 per cent is indicated by the Crop and Livestock Reporting Service of growers' intentions. If turkey growers carry out their plans, they are likely to receive even lower prices than they did in the past season.**

With the present system of refunding all the federal gasoline tax, and in most states, all the state tax, diesel fuel is very little cheaper than gasoline. In addition, the difference in first cost of a diesel tractor over gasoline is about the same whether it's a 4-5 plow size, or a 2-3 plow size. So, in terms of available horsepower, the first cost of a small diesel is considerably greater than that of a large diesel.

However, there are two items worth considering: If you already have a large diesel tractor, it may be desirable from the standpoint of fuel storage and convenience to have a small trac-

tor in the diesel version. Also, the tractor fuel is not subject to pilferage for use in automobiles. These items also apply to the use of LP gas tractor fuel.

**The nighthawk migrates from Alaska to Argentina and back each year, making it the longest known migration of a land bird.**

Other important considerations in tractor selection are design and construction of the tractor. This includes such things as quality of material used; workmanship in the tractor construction; accessibility of such frequently serviced items as air cleaner, oil filter, oil filler, and radiator screen.

Also to be considered are such things as availability of hydraulic system, live PTO, power steering, power adjusted wheels, and all the other features necessary in a modern tractor. It's also a good idea to check such features as operator comfort visibility, and safety.

Consider the dealer from whom you intend to buy the tractor. Does he have an adequate service department and carry a good stock of repair parts? If not, consider very carefully before buying from him. If you happen to break down in the busy season, and he can't supply you with parts and service quickly, his bargain price may prove to be very expensive. The small dealer with low overhead (if it means no parts and few mechanics), may be on the verge of going out of business. Buy from him, and you are in a very poor position to keep your tractor operating properly.

So, which is the best tractor for you to buy? It's still up to you, because there is no one "best" tractor. It all depends upon the situation.

## Certified Seed Is The Answer

There's a way for a farmer to be certain he's planting the variety of a crop he wants. And there's a way to be sure the seed is clean and has high germination. Certified seed is the answer.

D. F. McAlister, agronomist at the University of Arizona, says the biggest difference between certified seed and ordinary seed is that we're sure of what we're getting. That's especially important in regard to variety. We depend on adapted varieties and their outstanding characteristics—like good market quality, resistance to diseases, high yield, and lodging resistance. —*Arizona Extension*

# Use Your Corn Planter to Control Soil Insects

**Don't let underground robbers eat holes in your corn profits . . .**

Condensed from The Furrow

FOR YEARS, the attitude of farmers toward soil insects was pretty much "out of sight, out of mind." This situation has changed.

The damage these underground pests can do becomes quite apparent to every farmer who has planted and fertilized his corn, expecting top yields, only to harvest 50 bushels an acre from 80-bushel land. Checking back, he has pin-pointed the cause to reduced plant population due to soil insects, such as those listed below.

Many entomologists agree: "It doesn't *cost* to control soil in-

| INSECT | CONTROL* |
|---|---|
| Corn root worm | ½ to 1 lb. aldrin, heptachlor or BHC per acre in the row. |
| Cutworm | 2 lbs. toxaphene or ½ lb. dieldrin per acre in the row. |
| Seed-corn beetle | lindane or heptachlor seed treatment or soil treatment. |
| Seed-corn maggot | lindane or heptachlor seed treatment or soil treatment. |
| White grub | deep, early fall plowing; 3 lbs. aldrin, heptachlor, or dieldrin per acre, disked in. |
| Wireworm | lindane seed treatment or 2 lbs. aldrin or heptachlor per acre, disked in. |
| | *For more information, send for Iowa Farm Science Reprint FS-597, Iowa State College, Ames. |

Reprinted by permission from The Furrow, Moline, Illinois

sects, it *pays!*" An application of insecticide costing less than $2.50 an acre often increases corn yields 7 to 10 bushels an acre.

Soil insecticide attachments on new corn planters enable a farmer to place an accurate amount of insecticide in a band above the seed, where it'll do the most good. Pre-emergence herbicide attachments are also available.

## Cut Feed Costs for Dairy Profits

Feed normally represents about one-half the cost of milk production. One effective way to increase dairy profits is to cut feed costs. Research points the way to do this by replacing some of the grain and concentrates usually fed to dairy cattle with more high-quality roughage.

At the U.S. Department of Agriculture's Beltsville, Md., research center, for instance, it was found that dairy heifers fed large quantities of good forage reached normal weights at 24 months of age with much less grain than is usually fed. In contrast to the 2,000 to 3,000 pounds of grain commonly consumed before first calving, the Beltsville heifers grew normally on 560 pounds of grain plus plenty of good forage.

The dairy nutritionists experimenting with this means of reducing the costs of raising dairy herd replacements discontinued milk feeding of the heifers at 60 days rather than the usual 6 months, and discontinued feeding grain at 9 months. The 9 Holstein and 25 Jersey calves were offered as much forage as they would eat after 10 days of age.

These studies indicate that it is important to maintain a high legume content in the roughage rations. Alfalfa hay was combined with other high-quality roughages such as corn silage, timothy hay and corn silage, timothy hay and orchard grass-ladino hay, and bromegrass-ladino hay and corn silage.

Numerous other studies have shown how similar savings can be realized by substituting high-quality roughage for some of the grain concentrates fed to milking herds. A study in Michigan showed that cost of feed could be reduced from 20 to 25 per cent on average dairy farms—first by improving the quality of roughage and then feeding more roughage and less protein and grain. Producing 100 pounds of milk cost farmers who harvested and fed roughage of excellent quality 46 cents less than it cost those who used poor-quality roughage. —*West Virginia University*

# Prospects for Pig Artificial Insemination

**A report on progress in England. Major problems should be solved in two years, they believe . . .**

Condensed from
Farmer and Stock-Breeder

*A. H. Nicholson*

IT IS only two years since work in the field was started in this country (England) on artificial insemination of pigs. How long will it be before we can expect a service comparable with that offered for cattle? According to the Somerset Cattle Breeding Centre, and research workers at Bristol University's Veterinary School at Langford, it should be possible to tie up all the loose ends in another two years or, alternatively, to say definitely that such a service is not a practical economic proposition.

But such things rarely go according to plan. It may well be much longer before all the answers are known.

Nevertheless, considerable advances have been made. The Milk Marketing Board has not yet started the job at its own A.I. centres, but it is going on at eight private centres and I chose Somerset, run by Messrs. Horlicks, Ltd., to make a check on progress. At present no charge is made for the service there.

Mr. R. Clarke, a director of the company, which has established two A.I. units, at Ilminster and Langford, at each of which six boars are kept, is cautiously optimistic. He appeared pleased with progress since the Ilminster unit was started in February, 1956.

Conception rates, and here is the chief rub, have been more than doubled since the beginning of this year, when a farrowing rate to first inseminations of only 20 per cent was obtained.

Mr. Clarke thinks that this improvement is mainly due to the growing skill of pig producers in deciding at what point the insemination service should be summoned.

Undoubtedly this is the main difficulty. There is a tendency for pig-keepers to panic when signs of heat appear, and rush for the telephone.

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### Only a Warning

But, say the experts, the overt symptoms of heat are no indication, and should merely be taken as a warning that a careful watch must be kept, perhaps for three or four days, before the appropriate time arrives.

**Studies indicate that early man, fighting for his food, family, and existence, soon learned that a blow near the heart was fatal. They used the left arm to protect that region, while using the right for offense. Thus, the right arm became stronger and more skilled.**

As scientific knowledge about the reproductive physiology of the sow is incomplete and the detection of heat is often difficult, the onus must be on the producer to decide when to call the inseminator.

The period during which the female will accept the male, usually lasts for 48 hours in sows, but it may last as little as 24 or as long as 72 hours.

A test is to try whether a sow will stand to have her back pressed or to be sat upon. But with gilts the difficulty is greater.

Mr. J. Stower, the Centre's Veterinary Officer, is in charge of the Langford pig A.I. unit, which is adjacent to the Bristol University School, where Mr. Peter Radford, lecturer in animal husbandry, is working closely with Horlicks.

Here is an extremely useful form of co-operation, for Mr. Radford, who is an enthusiast, is convinced that research into various aspects of the reproductive physiology of the sow will provide the answers.

His line of approach is clearly defined. Among the aspects he considers it essential to investigate are: diagnosis and duration of the "hogging period"; time of ovulation and the effect on this of copulation; the longevity of both ovum and sperm and the effect of the diluent on the uterus.

### Two Year's Task

This is quite a program, but Mr. Radford is confident that, given the funds and the opportunity, it can be accomplished in about two years.

Meanwhile, the service goes on and an assessment of the results obtained to date is interesting.

At Ilminster there are four Large White boars: Croford King David 3rd; Hightown Dainty King 41st; Hightown Field Marshall 21st; and Clevewell Lion. There is also a Wessex, Garth Viscount, and a Landrace, Baytree Acke 12th.

Between January and November, 203 sows were inseminated and the monthly farrowing rates to first inseminations were, for

the months January to August inclusive, 15 per cent, 20, 55, 43, 54, 44, 29 and 44.

At Langford, where the policy of replacing the older boars with young ones, all of the Large White breed, is already being put into practice, there are at present five Large Whites, two of them seven-months-old and the others ten month-old Ardencote Prince 228th, two-year old Hemming Manor Champion Boy 2nd and four-year-old Croford King David 1st. There is also a 2½-year-old Wessex, Bromham Frivolity 8th.

This unit was started in January of this year and up to the end of November 233 sows were inseminated, only 28 of them in the first four months.

Of the first 100, 40 farrowed to first insemination, 17 to a second, 13 were barren, 27 returned and were not re-inseminated and three died.

While farrowing rates are improving they are still well below the level expected from natural service. But it should be noted that the fluctuations are to some extent due to necessary experiments with new apparatus.

Mr. Radford quotes the case of one large herd in which 67 per cent of 1,247 sows proved pregnant to natural first service, and according to premium boar service books it is not unusual to obtain 90 per cent.

### Better Quality Semen

Mr. Clarke explained that the decision to use only young boars was taken because the quality of the semen is better, it has a longer life and dilutes better.

Only Large Whites are being used, to simplify operations until the service is on a really sound basis, but later, especially when progeny-tested boars of different breeds are available, there is no reason why other breeds should not be brought in again.

**Tops of cars and trucks in extremely hot parts of the world are usually painted white — to reflect heat.**

Selection of both bulls and boars at Ilminster, and assessment of their breeding value, is in the hands of Mr. A. Macdonald, who is also pursuing a scheme to follow A.I. progeny through to the bacon factory which, among other things, would provide comparison between the performance of different boars.

### Just Started

Numbers of pigs born, time to bacon weight and grading will all be taken into account. But this work is as yet in its infancy.

I interviewed several pig producers who are using the service with good results. Some have gone over completely to A.I., keeping no boars at all.

Mr. J. A. Perham, of Manor Farm, Stocklinch, has some first-rate litters by Landrace semen from Ilminster. Of six inseminated, four farrowed to first service, with 14, 12, 14 and 15; one returned and was re-inseminated; and the other, a Wessex, had 12, six of which were born dead, a mishap which was not attributable to A.I.

Mr. Perham likes the system as being easy, and providing him with the use of a good boar, but commented on the difficulty of hitting upon the right time for service.

In one case the heat period extended over five days and the time of oestrus was correctly spotted on the fourth.

Two Wessex sows were inseminated with Large White semen from Langford for Mr. E. G. Eglinton, of Highfield, Bleadon. Both held to first service and one has farrowed 16 and is rearing ten. In this case the call for the inseminator was made on the third day of the heat period.

Mr. G. H. Croker, Nempnett Thrubwell, had five inseminated, four in-pig to first service and the other to a third.

All these producers were well satisfied with the service, but they are obviously experienced pig-keepers, able to spot the correct time for service.

Most pig-keepers may not be so adept and so the sooner the research work now going into the problem yields results the better, for there is little doubt that the future of the project on a national scale will turn on the discovery of a fool-proof, rule-of-thumb method of ascertaining the correct time for insemination.

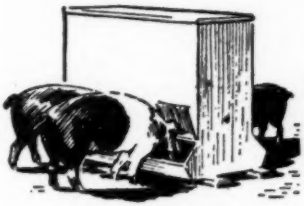
## Your Tractor Air Cleaner

Location of the air intake stack on the tractor has much to do with the amount of dust taken into the engine and consequent engine wear, according to S. E. Dowling, Florida agricultural engineer.

Tests conducted by a well known air cleaner manufacturer showed that locating the intake stack 18 inches above the radiator cut engine dust intake 87 per cent. When operating the tractor under extremely dusty conditions, Mr. Dowling recommends extending the intake even higher.

Proper operation of the air cleaner will prolong the useful life of the tractor. Proper care of the air cleaner will increase the life of your tractor more than any other single thing you can do for your tractor, he says. —*Florida Extension*

# Hog Farmers Watch Contract Farming



**An FFA Chapter spends $16,500 to build a model swine raising layout and test the new pig parlor system . . .**

Condensed from Breeder's Gazette

*Lano Barron*

SHOULD hog farmers turn to contract farming? The Arkansas City, Kansas FFA Chapter has borrowed $25,000.00 to help answer this question. Of this amount they have invested $16,500.00 in a modern swine-raising layout on a 10-acre tract of land under lease for 10 years; and about $4,000.00 in breeding stock.

Their breeding herd, consisting of 3 boars and 36 gilts—Hampshires and Yorkshires — is expected to produce 500 market hogs per year. They are using a multiple farrowing program to make the most efficient use of their facilities and give a steady income from a full six-times-per-year marketing schedule.

The FFA Chapter plan of operation is typical of that available to farmers in the vicinity of Arkansas City who agree to provide sufficient breeding stock, proper facilities, and follow a six-times-per-year marketing program. Parties to the plan are the producer, the packer, and the feed company.

Actually, according to Arthur Maurer, President of the packing company involved, the plan is more of an agreement than a tight legal contract, since the producer can not only quit any time —though the contract is for five years—but also can sell hogs to other buyers offering higher prices.

A provision in contracts now being proposed stipulates that the packing firm with which the contract is made must first get a chance to meet the other buyer's prices; and furthermore, if the prices can't be met by the contracting company and the hogs are sold elsewhere, the contract may be cancelled if the packing plant should so choose.

The packer agrees to pay 25 cents per hundred above the Chicago high-low average for the day on 200 to 240-pound hogs that grade out No. 1 on the rail. Hogs not grading No. 1 on the

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rail go at the local market price for No. 2 and No. 3. The contract between the packer and the farmer mentions that a good feeding program such as that outlined by the feed company, the third party in the contract, should be followed.

**Rundown condition of equipment and buildings is the most common cause of farm accidents, safety specialists say.**

The feed company, besides agreeing to sell feed to the farmer at carload prices, plays pretty much a service role. They offer building plans for the multiple farrowing program, work with farmers on converting existing facilities, and otherwise advise and assist in practices promoting efficient production, but in no wise contract beyond feed sales. The company's recommended rations include whatever grains are cheaper at the time.

Wide spread interest in the testing program has brought hundreds of visitors from at least fifteen states. They are greeted by a line of metal buildings extending 600 feet north and south, most of which were erected in one day last summer by about 40 boys and their dads. The buildings include feed storage, a farrowing house, three sow colonies, two pig nurseries, four feeding floors (pig porches), and two boar pens.

The breeding herd has paved summer shelters equipped with water sprays for hot weather, but no pastures. This means, of course, that iron, in various forms, must be included in the ration to combat anemia, since the hogs are on concrete a large part of the time.

Basically, the production schedule makes use of the facilities in four phases. First, the sow colonies are used for housing the sows during the breeding and pre-farrowing stage. Second, the sows are moved to the farrowing house two or three days before due, where they are kept in the farrowing stalls until the pigs are four weeks old, at which time weaning has been concluded. Third, the pigs are moved to the pig nurseries where they are kept on growing rations and in groups of 20 to 40 until they reach 70 to 75 pounds. And lastly, they are moved to the feeding floors (pig porches) for fattening rations until market time.

Boar pigs slated for market are castrated at three weeks. All pigs are vaccinated for erysipelas at six weeks and again at 16 weeks, for cholera at eight weeks, and are wormed at 10 and 16 weeks.

Sows are wormed and vaccinated for erysipelas a month

before farrowing; and every hog brought to the plant is vaccinated for leptospirosis and isolated for 30 days.

Carefully kept records enable the young operators to know exactly the cost of production of each group of pigs at any time, and indications are now that costs will average 9 to 10 cents a pound.

Production costs and any other information obtained first hand from this testing program should be of great benefit to the farmers in the vicinity of Arkansas City. The Future Farmers and their Adviser, Harold Walker, are to be highly commended for such a practical and substantial testing program. Whatever the results, it stands to either save the local farmers a lot of money they otherwise would have invested, or else point the way to greater profits if they adopt the system. It will be worth watching.

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## Sunny Side of Cycle for Beef, Sheep

The current favorable price situation for cattle and lambs is due to last awhile longer, says a Washington State economist.

Karl Hobson says reduced slaughter supplies of cattle have shoved prices up to the highest level in five years. Slaughter supplies are likely to remain low enough to favor a fairly strong price situation for several years. There will, of course, be some price dips when slaughter supplies are seasonally large. For example, sales of fed cattle are likely to be large enough some time this spring to push prices down. Also, demand for feeders may be weaker next fall.

Another question mark in the cattle price outlook is consumer buying power. This will be governed by the depth and duration of the current business slump and the speed and extent of the upturn. There is the possibility, of course, he added, that the high degree of prosperity we have enjoyed in recent years may not return soon. The level of employment and consumer buying power are important factors in the price of beef cattle.

Lamb slaughter will be at a reduced level for a few years too, Hobson said. That's because producers are holding back ewe lambs to increase flocks, he explained.

*—State College of Washington*

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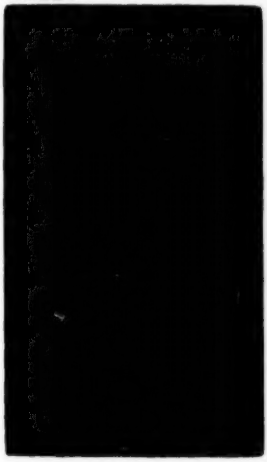

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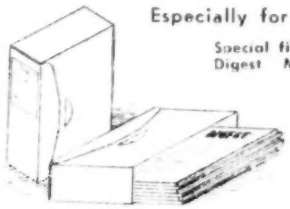

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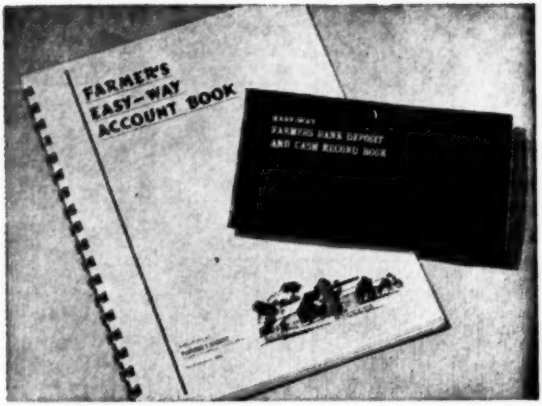


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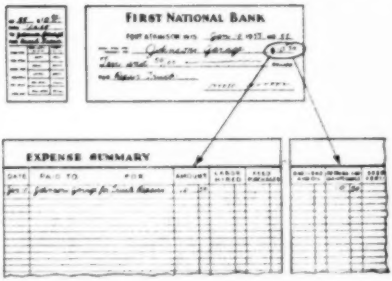


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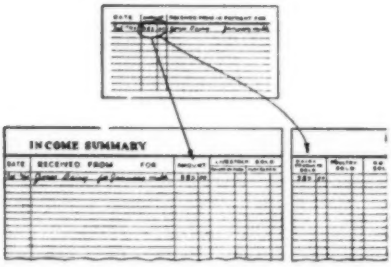


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